

Flight, April 29, 1911.

# FLIGHT

First Aero Weekly in the World.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

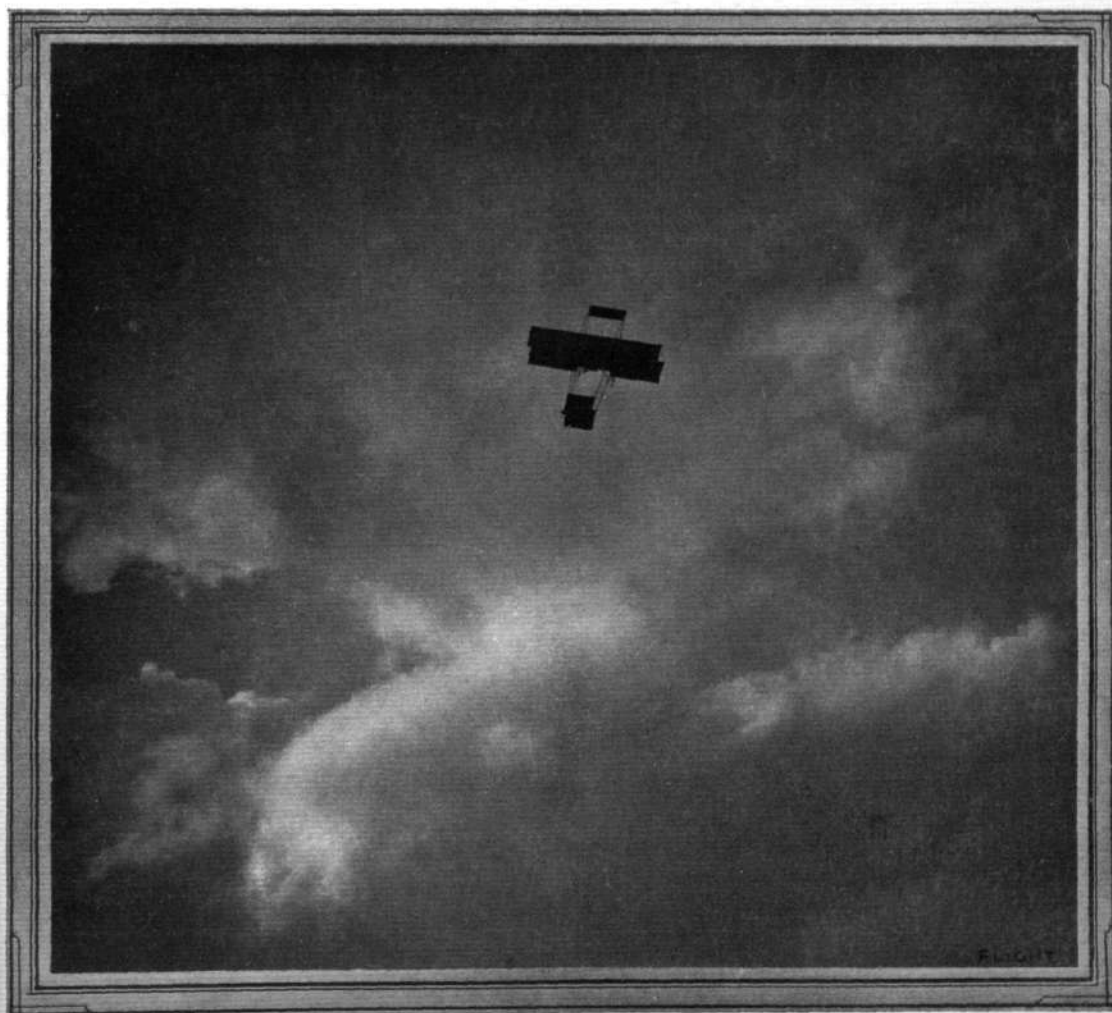
OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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IN THE CLOUDS.—A snapshot of Mr. H. M. Maitland flying over Salisbury Plain recently, the day before he had the accident which has temporarily taken him out of the aviators on the active list.

## THE VISTA OPENING UP.

It is not everyone who recognises the true value of the *Daily Mail* Prize and of the promised European Circuit, or the vital part that this type of long-distance trial is likely to play in the immediate prospects of the movement. Now more than ever it is necessary for the aeroplane to be brought into evidence; and now at last it is beginning to be time for it to be put forward and proved as a practical means of locomotion fit to take its place side by side with the railway train, the steamship and the motor car. Flight is here—it has arrived to stay, and already the aeroplane has taken its place, as more than a phenomenon, among the commonplaces of civilised life. The man in the street no longer smiles in a semi-incredulous way when he hears or reads of flights which even a year ago would have seemed to him flights of imagination more than of anything else. That is good, so far as it goes, but there is another side which needs now to be realised. It is simply this, that the man in the street *hears* of and possibly even *sees* what is being done—he does not *participate* in it, which makes all the difference in the world. Let us take the analogy of the motor car—it is becoming a little hackneyed, perhaps, but that cannot be helped for it affords the nearest comparison to hand. Going back a dozen years it is found that the car was at that time in very much the same position that the aeroplane is to-day. It was beginning to emerge from its first crude beginnings and the ordinary person was commencing to regard it seriously. But the average man still believed that the car must remain for all time the toy of the idle rich or perhaps even of the mere crank, although he had no longer any doubt about its mechanical possibility. That he did not foresee the future is not to be laid to his blame, for how many of those who like ourselves took some small part in helping forward the development of the self-propelled road vehicle saw as far into the future as 1911? Very few indeed. But with the lessons implied in the phenomenal development of the car—mechanically and industrially—the world ought at least to be better equipped to judge of the future of this new movement than people were in the infant days of its elder sister. It is not with idle speculations of what may happen that we are concerned just now, but rather of what must or should be done to help forward the science and the industry as rapidly as possible.

Still keeping in mind the lessons of the car. In its early days it was the same *rara avis in terris* that the aeroplane is to-day. It stood in want of publicity—not only the publicity of the newspaper Press, which was extended to it in generous meed, but of that species which can only be described as tangible publicity. That is, it had to make itself seen and known on the highways and in the byways, for no amount of reading of sensational feats by motorist or aviator carries with it the same impression as actual sight of man and machine under ordinary everyday circumstances. Now, the position at the moment is almost identical with that in which motoring found itself just prior to the first Thousand Miles' Trial, except that the prospects of aviation are a whit more rosy than those of motoring appeared then to be. The vehicle itself was crude and undeveloped; it had to run the gauntlet of bitter hostility from every class of the community, and we state that which we know when we say that the little band of enthusiasts who then formed the Automobile Club were in despair at the thoughts of their favourite movement meeting an almost immediate

demise, so low were the fortunes of motoring sunk at that historic period. Aviation is not in that parlous state, for the gods be thanked these are more enlightened days than those, but there still is need of all the publicity of which we have spoken that can possibly be obtained.

Pursuing yet further the analogy, it would be quite impossible to exaggerate the change that was wrought by that place-to-place contest the Thousand Miles' Trial, which familiarised the public with the appearance and the capabilities of the car. Before it took place, it seemed a wild dream of phantasy for anyone to suggest that sedate gentry should give up their carriages and take their journeys abroad in one of the new-fangled mechanical devices which were making a painful bid for the public suffrage. As wild as it would seem now were we to suggest that the Prime Minister should give up his car and betake himself to Westminster in an aeroplane! But are the two cases really any different? We think not, for the aeroplane is at least as far advanced, as safe and as practical as was the car in the middle nineties—when, for example, one well-known firm of makers actually felt it their duty to call before the board of directors the purchaser of a 12-h.p. 4-cylinder car that they themselves had built in order to warn him that he was acquiring a machine of great power needing to be treated with the greatest circumspection!

As for the value of place-to-place events like the contest for the *Daily Mail* Prize and the European Circuit and their influence on the man in the street, to whom we have to look for the future of the industry, let us put a case in point. Supposing Grahame-White or any other successful aviator to call at the house of the average race-goer on the morning of a Sandown meeting and offer to take him down by air. What would the reply be? A very decided negative in nine cases out of ten. The only reason for this negative would be that the average person is not familiar with the machine and its capabilities, simply because he has not had sufficient opportunity given him to become *au fait* with it. Now, let us get on a little and imagine the same episode occurring at the end of the *Daily Mail* 1,000 mile circuit, when men and machines have given open and ocular place-to-place demonstration of their speed, reliability and safety. The odds are ten to one that the recipient of the offer would jump at it; and it is at least an even money chance that the result of his experience would be that he would become the owner of a machine all to himself only a very little later. As things are to-day, some may think this illustration a little far-fetched, but it must not be forgotten that we have only to substitute "motor car" for "aeroplane" and we have exactly what *did* happen in cases without number when motoring was in its swaddling clothes. Have we not, moreover, already seen during the past week or two so important a personage as Prince Henry of Prussia flying his own machine a distance of 30 miles, so highly-placed a Government official as Colonel Seely, the Under-Secretary of State for War, taking a trip with Grahame-White in spite of a high gusty wind blowing, and such leading members of British Society as the Duke and Duchess of Beaufort, with prominent members of their house party, making short flights with M. Tabuteau on a "Bristol" biplane. Surely it needs but a little such direct familiarity with the aeroplane to produce private owners and users in their scores, then in their hundreds, and before so very long in their thousands.

## FLIGHT PIONEERS.



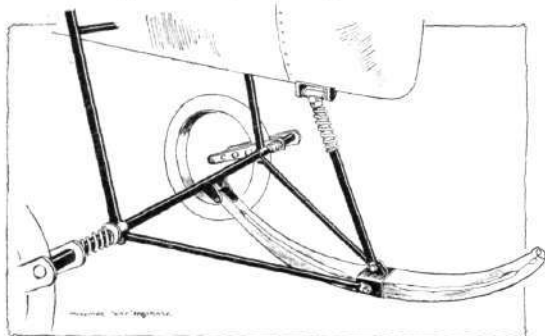
M. MAURICE DUCROCQ.

# MORE UNDER-CARRIAGES AT OLYMPIA.

THE accompanying illustrations form an interesting addition to those already published in FLIGHT accompanying our recent articles on undercarriages at Olympia. These further sketches illustrate some details in undercarriage construction of a kind that is in a class apart from anything we discussed in the article aforementioned. In the comparisons already made we dealt with undercarriages of more or less stereotyped varieties, and although marked differences in

over which it is travelling the sleeve slides up the column and extends the springs. It will be observed that a steel tie is introduced diagonally in the extension of the frame in order to assist the beams in taking the load of the springs.

Another very interesting axle arrangement is that on the Martin-Handasyde machine. Here there is a central column projecting vertically beneath the body, and near the base and head of the



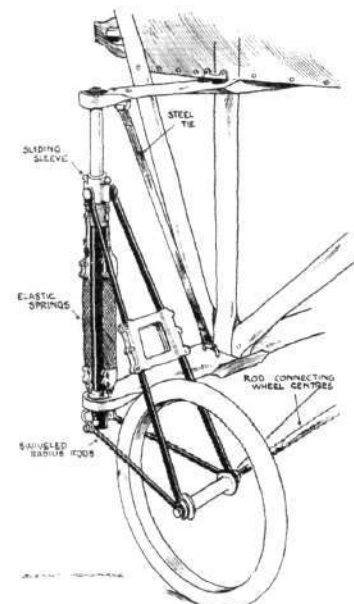
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Under-carriage of the Kny aeroplane, built by Mulliner's, of Long Acre and Northampton.

principle between the kinds described, nevertheless they all possessed in common an absence of anything in the nature of a complicated mechanism for the suspension. The Farman type wheel and skid combination with which most of the machines under review were

equipped is certainly the essence of simplicity, and if effective enough is at any rate crude. By comparison, therefore, the accompanying illustrations of what may be described as essentially a mechanical type are worthy of a classification on their own account.

Of these the most familiar is the well-known Blériot, characterised now as hitherto by the absence of any sort of skid. Beneath the front of the machine is a rectangular timber frame consisting of two flat beams separated by two vertical struts. The beams extend beyond the struts and carry between their extremities two tubular steel columns upon which the suspension mechanism is mounted. This consists of a triangular bracket

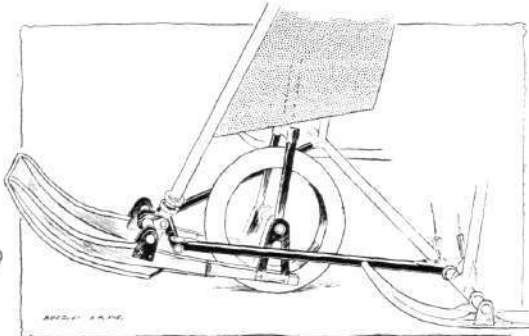


"Flight" Copyright.

The well-known Blériot under-carriage.

arranged somewhat like the back forks and stays of a bicycle. The fork, which forms a radius-rod, is swivelled to the base of the steel column and the stay-rods are hinged to a sleeve that rides upon the upper part of the column.

This sleeve is anchored to the lower beam of the frame by elastic springs. When the wheel rises under the inequalities of the ground

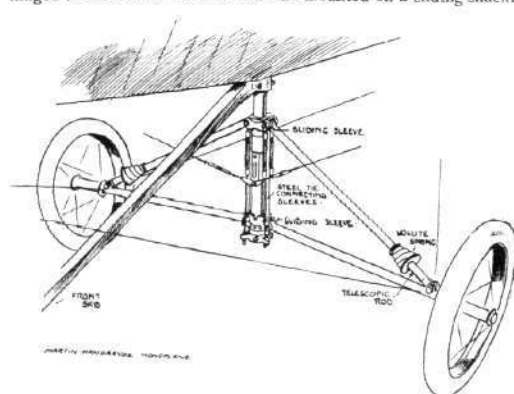


"Flight" Copyright.

Swivelling fore part of the under-carriage on the Breguet biplane.

column are two sliding sleeves connected by steel distance pieces, and pulled down together towards the lower end of the column by four elastic springs anchored to the base of the column and to the uppermost sleeve. The axle, on the extremities of which are the wheels, is divided, and each half is hinged separately to the lower sliding sleeve. Diagonal telescopic struts, in which volute springs are introduced, similarly connect the axle to the upper sliding sleeve. With this arrangement the axle can rise bodily and either wheel can ride independently.

The other illustrations show two examples of what may be termed toe skids, one being that fitted to the Kny monoplane built by Mulliner's, of Northampton and Long Acre, and the other being the Breguet. The Kny design includes a very massive piece of timber hinged in a rather light manner to the axle, that carries the wheels on a coil-spring suspension, as shown in the sketch. The toe skid is also trussed to the body of the machine by a telescopic strut, hinged to the skid at its lower end and mounted on a sliding shackle



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Under-carriage of the Martin-Handasyde monoplane.

above. In the Breguet undercarriage the toe skid is hinged to a triangular frame, and carries by a rearward extension one of the three wheels on which the machine rides on the ground. This wheel is inter-connected with the rudder, and the machine can therefore be steered on the ground, the toe skid being thereby kept always in line with the machine's motion.

## FLYING IN FRANCE.

SOME OBSERVATIONS DURING THE EASTER HOLIDAYS AT THREE FLYING CENTRES, ISSY-LES-MOULINEAUX, JUVISY, AND CHALONS CAMP.

By E. KEITH DAVIES.

**Issy.**—At Issy there are two dirigibles and 20 aeroplane hangars, or the most part occupied by the lesser known firms and numerous experimenters. Flying was not permitted till 4.30 in the afternoon, when several machines came out, the most interesting being the latest Pischoff, the Vinet, and an all-steel Voisin.

The Pischoff machine is certainly unique, and gives one the appearance of a small car with a monoplane attached about 4 ft. above as an afterthought. The chassis is composed of strong wood side members, attached to which are two skids and a very strong steel axle and pair of wheels. The engine is placed in front with a car radiator, starting-handle, bonnet, and scuttle dash à la Brooklands racing car, the pilot and passenger sitting side by side. The power is transmitted from the engine by a plate-clutch and cardan-shaft and then by a chain to the propeller running at half engine speed, which is fitted behind the main planes close up to the trailing edge. It is very novel to see the pilot take his clutch out, go round to the front, start up, get comfortably seated, accelerate the engine, and away. The machine flies very nicely in a straight line, but assumes some weird angles when turning. It is flown by the inventor, M. Pischoff, who in the evening left for Juvisy, arriving at the latter place safe and sound.

The Vinet is an enlarged Demoiselle type of machine, very well made, and fitted with a 40-h.p. E.N.V. It flies very well, but does not look as if it could stand very rough usage.

The Voisin is a very fine piece of work of the military type biplane, with extensions, 70-h.p. Gnome engine, no front elevator, and single monoplane tail; the framework is all steel tube. Other machines to be seen were the Kaufman, Prier's London to Paris Blériot, several imitation Farman's and a few freaks.

**Juvisy.**—A flying ground about the size of Brooklands, inhabited by 19 hangars, chiefly occupied by unknown machines, with the exception of the Goupy, Sloan, and Pischoff. The Sloan machine is rather interesting and is a serious attempt to obtain stability by the shape of the main planes. It is a biplane with a monoplane fuselage, Gnome engine in front and a geared down propeller. The lower planes are set at a dihedral angle and the upper are concave, both planes tending to meet each other at their extremities. The machine behaves very well in the air and has many good points in its construction.

Champel, the old Voisin pilot, who was at the Lanark meeting last year, is also established here, and turns out a very fine copy of

the Farman, fitted with a 60-h.p. E.N.V. He took out a new machine for the first time, and had a singular mishap. His soft wool hat blew off, and catching the propeller, took a piece clean out; the hat was picked up afterwards in shreds.

The Goupy machines, now fitted with extensions, were out doing some fine work, one fitted with a 70-h.p. Gnome being very speedy.

The usual number of freaks were to be seen.

**Chalons.**—The first thing that strikes one on arriving is the vast extent of perfect flying area. As far as one can see the land is flat; good landing and very few trees. The headquarters of the Army Aeroplane Corps are here, and over fifty military machines, officers and men, all ready for mobilisation at a minute's notice. One can nearly always see one or two Army machines in the air, distinguished by the tricolour painted on the rudders.

The following firms are established on ground adjoining:—Antoinette, Farman, Sommer, Hanriot, Nieuport, Voisin, Train; the Farman works being very extensive. At one time there were as many as eight machines in the air at once, and all out for long flights round the surrounding country.

Wynmalen, the Farman pilot, was out doing some of the finest flying one could wish to see. His turning movements at a banking angle of about 35 degrees, flying at a height of three to six feet, and following the undulations of the ground, then suddenly climbing to a good height, and shutting off his engine and finishing with a perfect spiral *vol plané*.

The Antoinette machines were doing good work, and flying exceedingly steady. On close inspection there does not seem to be any alteration from last year's model.

The Nieuport, fitted with a 50-h.p. Gnome, is very speedy and rips through the air at 65 to 70 miles per hour, and requires a fair amount of room for landing on account of its running along the ground for some distance before coming to a standstill.

The Train is another Demoiselle type of machine, made very well and fitted with a 5-cylinder Anzani engine. It was a remarkable sight to see such a small machine over a thousand feet high and coming down with the engine cut off.

Things that strike one in France at the present moment are, the adoption of extensions on every type of biplane, the great number of Gnome engines in use, and the general feeling that aviation is *the thing*.

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Visitors arriving at the flying grounds at Brooklands last Saturday for the Brighton flight.



## MAY WEATHER—WHAT IT IS LIKELY TO BE.

By T. F. MANNING.

MAY is one of the four best months of the year for flying, as judged by the meteorological records. In this month we get very nearly a maximum of sunshine; more, in and around London, than we get in June, and only a trifle less than in the top month, July.

We also have very nearly a minimum for the year of gales, fogs, and snow, and the only adverse phenomena intensified are thunderstorms and rainfall. But to these may be added a probable increased prevalence of east and north-east winds.

This latter fact conflicts with the general belief that March is the month pre-eminently of easterly wind, and perhaps there will be less disappointment with the quality of May weather if it be realised that, while east and north winds begin in March, they become more common in April, and prevail still more in May.

Gales fall almost to their lowest frequency for the year, and number only about one-third of the storms of January, the worst month. In one hundred years we have had only 97 gales during May, so that the odds against one gale in this whole month are 100 to 97. As this ought to be an important factor in fixing the dates of flying events, it may be said that the records show June to have the fewest gales of any month; next come July and August, with equal numbers, then May, September, and April. The difference between these and the other six months of the year is very great, October showing an increase of 46 per cent. over September. Like April, this month (May) has very few calm days, the average being only 1½ for the whole month.

Fogs drop to nearly their lowest number, and the odds against a fog in May (London) are 4 to 3. Snow almost disappears. The chances against a snowfall in the first week are 10 to 1, and during the remainder of the month 20 to 1.

Hailstorms are only about half as frequent in May as in April. The chances against one during the whole month are 10 to 9, and towards the latter end hail becomes extremely rare.

But thunderstorms become very much more frequent, showing an increase of 100 per cent. over April, and reaching just half the maximum for the year, which occurs in July.

There is a considerable rise in temperature during May, the mean for the month, over a period of sixty-five years, being 6° higher than in April. The mean temperature for the last day of May is 71° higher than that for the first day. But we must look for a cold period from the ninth to the fourteenth, and this usually affects not only England but the greater part of Europe.

As in preceding articles, it may be interesting to compare this with the preceding month, and to see what progress we have made since January, the worst month of the year. The average number of events occurring in a period of ten years is as follows:—

	January.	April.	May.
Ten years' gales ...	25	12	10
" snowfalls ...	39	12	1½
" fogs... ..	40	15	7½
" dense fogs ...	8	1½	1
" hailstorms ...	3½	15	8
" thunderstorms ...	½	7	13
Hours of sunshine during the month (at Greenwich) ...	42	149	201
Rainy days ...	15	12	12½
Average rainfall ...	1'88 in.	1'57 in.	1'91 in.

### "The Encyclopædia of Sport."

This is an age of encyclopædias, and the time has been considered appropriate to issue a revised edition of the "Encyclopædia of Sport and Games," which, under the editorship of the Earl of Suffolk and Berkshire, first made its appearance ten years ago. Since then, when the Editor hesitated as to including an article on cycling, the term sport has developed a much wider meaning, so that the new volumes are new not only in size and form but also in much of the matter contained in them. Everything that was in the original volumes has been either re-written or revised so as to bring it up to date, and full advantage has been taken of the great strides made in recent years in the art of illustration. Each volume contains on an average about 500 photographic illustrations, all excellently reproduced, besides a number of drawings and several coloured plates. Two volumes of the new series have so far made their appearance, the first ranges from "A" to "Cricket," while the second continues from "Crocodile Shooting" to "Hound Breeding." Volume I, with appropriate up-to-dateness, opens with an article on aeronautics, written by Lord Montagu of Beaulieu, while the subject of the coloured frontispiece

Mean temperature ...	38'6	47'3	53'1
Degree of humidity ...	88'0	75'8	74'2

Of overcast and very cloudy days there are an average of 13½ in January, 9 in April, and only 8½ in May. Taking all weather conditions into account, or rather all that can be recorded in figures, May appears to be the third or fourth best flying month of the year.

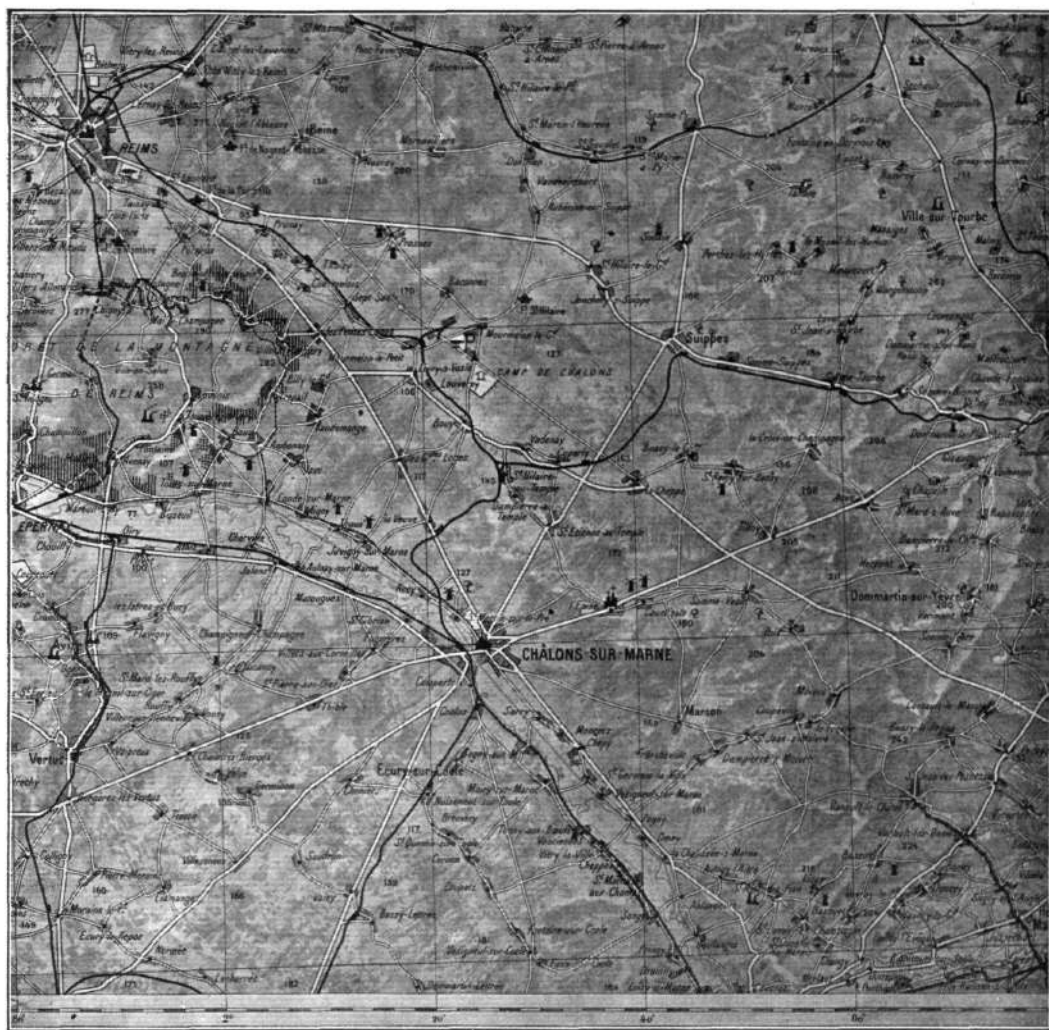
The appended table gives the number of weather events occurring on each day, in a period of one hundred years, so that the probabilities against any event on a given day are as 100 to the figure in the table:—

Day.	Gales.	Fogs.	Snow.	Hail.	Thunder.	Mean Temp.
1 ...	5	1	1	3	4	49'2
2 ...	4	3	1	5	6	49'4
3 ...	2	1	1	4	5	49'7
4 ...	1	1	1	4	3	50'0
5 ...	4	4	2	5	6	50'3
6 ...	5	1	1	2	4	50'6
7 ...	3	2	2	2	3	50'8
1st week ...	24	13	9	25	31	—
8 ...	2	3	—	4	6	51'0
9 ...	4	1	—	5	6	51'2
10 ...	3	1	—	2	2	51'5
11 ...	2	2	—	2	3	51'7
12 ...	4	1	—	2	3	52'0
13 ...	6	2	—	4	2	52'3
14 ...	3	2	1	2	3	52'6
2nd week ...	24	12	1	21	25	—
15 ...	3	2	1	6	7	52'8
16 ...	1	3	2	4	3	53'1
17 ...	3	7	—	3	5	53'3
18 ...	5	1	—	2	3	53'6
19 ...	6	3	—	3	6	53'9
20 ...	7	4	—	3	5	54'2
21 ...	1	3	—	2	5	54'6
3rd week ...	26	23	3	23	34	—
22 ...	1	8	1	3	5	55'0
23 ...	2	2	—	3	7	55'3
24 ...	2	1	—	3	4	55'6
25 ...	5	2	—	3	4	55'7
26 ...	3	5	—	2	3	55'9
27 ...	4	3	—	7	5	56'0
28 ...	3	3	—	1	6	56'0
4th week ...	20	24	1	15	36	—
29 ...	1	1	—	2	7	56'2
30 ...	1	2	—	2	2	56'5
31 ...	1	1	—	1	3	56'8

is a charming representation of M. Louis Blériot's historic cross-Channel flight. The article on "Aeronautics" is a lengthy one and the subject is well dealt with and illustrated by a comprehensive selection of photographs. After treating of aeronautics in a general way, Lord Montagu, in a succinct manner, gives the history of the development of flying up to date, and also discusses the essential details of various types of machines and the more notable examples of them. Dirigibles likewise come in for a good deal of attention, while balloons of the ordinary type are not forgotten. At the end of the article is a bibliography, from which we notice however, that, curiously, FLIGHT is omitted, but doubtless this will be put right in a future edition. There are also a good series of articles on automobilism by Lord Montagu and Mr. Alex. J. M. Gray.

Generally speaking, aviators do not usually confine their attention to that science, and in this encyclopædia they will find information on practically every branch of sport. All the articles have been written by experts in the various subjects, and are written in an enlightening style which is not too technical, so that the volumes form a very delightful addition to anyone's library. Bound in cloth, the volumes are published by William Heinemann at 20s. 6d. net.

## A MAP FOR MILITARY AVIATORS.



Roads ... ..	—
Railways... ..	—
Tramways ... ..	—
Aerodrome ... ..	□
Hydrogen dépôt ... ..	□
Sheds for dirigibles ... ..	□
Sheds for aeroplanes ... ..	□
Houses ... ..	□

## References.

Belfries, churches ... ..	—
Railway stations ... ..	—
Windmills ... ..	—
Factory chimneys ... ..	—
Trees ... ..	—
Forts ... ..	—
Castles ... ..	—
Columns ... ..	—

Block by La France Automobile et Aérienne.

Watercourses ... ..	—
Canals ... ..	—
Lakes ... ..	—
Marshes ... ..	—
Woods ... ..	—
Altitude ... ..	215
Electric wires ... ..	—
Dangerous landing places ... ..	—

THE French Army has now a large corps of aviators, and as cross-country flying forms the major part of their work the need of good maps, or rather charts, showing the information necessary to aviators has been no sooner felt than steps have been taken at once to meet the need. Commandant Pollacchi, of the Geographic Service of the Army, set to work, and the block which we reproduce on this page from our French contemporary, *La France Automobile et Aérienne*, shows a portion of the map which has been prepared of

the district round Chalons Camp. As will be gathered from the list of the signs used, the map shows most clearly all the landmarks which would be seen by the aviator, but it is only possible to give a faint idea of these in black and white, the original being in colours. Our illustration will, however, serve to show the methods adopted in drawing up this excellent map, and it will be seen that a splendid start has been made which will doubtless be improved upon as time goes on.

# The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

## Committee Meeting.

A MEETING of the Committee was held on Tuesday, the 25th inst., when there were present:—Mr. R. W. Wallace, K.C., in the chair, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Prof. A. K. Huntington, Mr. Alec Ogilvie, Mr. Mervyn O'Gorman, Mr. C. F. Pollock, and Harold E. Perrin, Secretary.

**New Members.**—The following new members were elected:—Dr. Francis Alexander Barton, Paul R. Hasson, and Roger Prideaux Selby, R.N.

**Aviators' Certificates.**—The following Aviators' Certificates were granted:—

- 67. W. R. Prentice.
- 68. E. C. Gordon-England.
- 69. Henry R. Fleming.
- 70. C. C. Turner.
- 71. Lieut. C. R. Samson, R.N.
- 72. Lieut. A. M. Longmore, R.N.
- 73. Lieut. W. Parke, R.N.

**Brooklands to Brighton Race.**—The rules as under were confirmed:—

*Under the Rules of the Royal Aero Club and the Federation Aeronautique Internationale.*

1st Prize, £20. 2nd Prize, £30.

A special prize of £20 will, in addition to the above prizes, be awarded to the first biplane crossing the finishing line, provided a landing is made on the Shoreham Aviation Ground.

1. The winner to be the aviator who first crosses an imaginary line between the Royal Albion Hotel and the head of the Palace Pier, and complies with the following conditions.

2. The start will be made from Brooklands Aerodrome, between the hours of 3 and 6 p.m., on Saturday, April 29th next, weather permitting. If the weather is unsuitable, the start will be made on Wednesday, May 3rd, or on the following Saturday, between the same hours.

3. The minimum number of starters shall be three. A competitor shall be considered to have started when he is clear of Brooklands Aerodrome.

4. Each competitor must carry a number on his machine, and when passing over the pier must be sufficiently low so that his number may be easily verified by the Official Observer.

5. Landings must not be made on the front at Brighton. After crossing the pier a competitor may fly to the Shoreham Aerodrome, where his machine will be housed by the proprietors of the ground, should he so desire.

6. Entries to be sent in to the offices of the Brooklands Automobile Racing Club, Carlton House, Regent Street, S.W., on or before 12 noon on Friday, April 28th, 1911.

7. Should any questions arise at any time after the date of entry as to whether a competitor has properly fulfilled the above conditions, or should any other question arise in relation to them, the decision of the Committee of the Royal Aero Club shall be final and without appeal.

8. A competitor by entering waives any right of action against the Royal Aero Club for any damages sustained by him in consequence of any act or omission on the part of the officials of the Royal Aero Club or their representatives or servants or any fellow competitor.

Every competitor must approach the finishing line *via* Shoreham Gap, leaving the railway bridge over the River Adur on the left. Flying along the front or over the town of Brighton is prohibited. Any competitor infringing this rule will be disqualified and will also render himself liable to have his Aviator's Certificate suspended.

**Official Timekeepers.**—The following official timekeepers were re-appointed for the year 1911:—F. T. Bidlake, J. H. Burley, T. D. Dutton, A. V. Ebbelwhite, C. P. Glazebrook, James M. Inglis, A. G. Rennie, A. G. Reynolds, and Z. Wheatley.

**Appointment of Sub-Committees.**—The following sub-committees were appointed:—

**Finance Committee.**—Griffith Brewer, Ernest C. Bucknall, Prof. A. K. Huntington, C. F. Pollock, Sir Charles D. Rose, Bart., M.P., and Hon. A. Stanley, M.P.

**Competitions Committee.**—F. P. Armstrong, Griffith Brewer, Ernest C. Bucknall, G. B. Cockburn, Col. H. C. L. Holden, R.A., F.R.S., Prof. A. K. Huntington, V. Ker-Seymer, Major F. Lindsay Lloyd, J. T. C. Moore-Brabazon, Mervyn O'Gorman, and A. Mortimer Singer.

**Grounds Inspection Committee.**—Ernest C. Bucknall, G. B. Cockburn, Major C. de W. Crookshank, R.E., Prof. A. K. Huntington, V. Ker-Seymer, Major F. Lindsay Lloyd, J. T. C. Moore-Brabazon, and N. C. Neill.

Other sub-committees were appointed, and will be published next week.

## Gordon-Bennett Aviation Cup.

The race for the Gordon-Bennett Aviation Cup will be held on Saturday, July 1st, 1911, and the Committee of the Royal Aero Club will make its decision as to the venue very shortly.

The following countries, each represented by three competitors, will take part in the contest:—America, Austria, France, Germany, and Great Britain.

The Committee of the Royal Aero Club will select the three representatives of Great Britain. Entries from British aviators will be received up to 12 noon on May 1st, 1911. Intending competitors are requested to send in their names on or before that date. Entries must be accompanied by a remittance of £20, which amount will be returned should the entrant not be selected.

Entries so far have been received from A. Ogilvie, James Radley, James Valentine, C. Grahame-White and C. H. Greswell.

## "Daily Mail" Second £10,000 Prize.

Entries for this Competition close at 12 noon on June 1st, 1911.

The entrance fee is £100, payable in one sum or as follows:—

£25 by 12 noon on June 1st; £75 by 12 noon on July 1st. Late entries will be received up to 12 noon, July 1st, 1911, in which case the entry fee will be £200.

Copies of the rules and entry form can be obtained from the Secretary, Royal Aero Club, 166, Piccadilly, London, W.

The following entries have been received:—1. Louis Blériot; 2. Louis Blériot; 3. Louis Blériot; 4. James Radley; 5. C. Grahame-White; 6. C. Grahame-White.

## Manville £500 Prize.

The next date for this competition is Saturday, May 6th. Entries have been received as follows:—1. S. F. Cody; 2. H. Barber; 3. A. Ogilvie.

Rules can be obtained from the Royal Aero Club.

## Army and Navy Aviation Prizes.

(Presented by Mr. A. Mortimer Singer.)

Lieut. Wilfred Parke, R.N., has sent in his entry for the above prizes.

The rules can be obtained from the Royal Aero Club.

## Hurlingham Club.

A further balloon contest will take place at Hurlingham on Saturday, June 24th, 1911, and the complete list of dates is as follows:—

Saturday, May 27th, 1911.

Saturday, June 24th, 1911.

Saturday, July 15th, 1911.

## Aero Club of the Argentine.

The following letter has been received from the Aero Club of the Argentine:—

"24th February, 1911.

"DEAR SIR,—The Aero Club of the Argentine having been affiliated to the F.A.I. at the Statutory Meeting held in Paris on the 27th and 28th October last, we have now the pleasure of placing our institution at Buenos Ayres at the disposal of the members of the Royal Aero Club, and send our cordial salutations, and venture the hope that, as we are now an affiliated club, it will help to strengthen the bonds of friendship between our two clubs.

"Yours faithfully,  
(Signed) "GEORGE NEWBURY,  
"President."

## Presentation of a Glider to the Club.

Mr. Fred Scully has kindly presented to the Club a glider made by Mr. T. W. K. Clarke. The glider will be sent to the Club's flying grounds at Eastchurch.

HAROLD E. PERRIN,  
Secretary.

166, Piccadilly.



## PROGRESS OF FLIGHT ABOUT THE COUNTRY.

NOTE.—Addresses, temporary or permanent, follow in each case the address direct to the Secretary. We would ask Club Secretaries in FLIGHT, 44, St. Martin's Lane, London, W.C., by first post Tuesday at latest.

### Birmingham Aero Club (165, HAMPTON STREET).

THE exhibition of models at Bournville on Easter Monday and Tuesday was marred by some of the models going astray on the railway. There was, however, a very good display, and some fine flying was seen, while the arrival of Mr. Grahame-White on his aeroplane, as recorded in our last issue, all added to the interest of the meeting. The judges, Messrs. P. L. Renouf and M. Toombs, made the following awards:—

Special vellum certificates to G. P. Bragg-Smith (fabric), Twining (channel and "H" section wooden girders for framework), Ding and Sayers (model winding machine and design for stability and control), Twining (compound winding machine for models).

Ordinary certificates to E. E. Noble (jig for propeller manufacture), W. Hughes (aeroplane, Curtiss type).

Scale models.—1st, G. P. Bragg-Smith; 2nd, G. Blumfield.

Class 4 (Gold Medal).—1, G. P. Bragg-Smith; 2, R. Ding; 3, J. O. Lea.

Class 5.—1, G. Davies (Twining); 2, R. Ding.

Class 6.—1, G. Mason; 2, E. Trykle; 3, Dr. Ratcliffe; 4, E. E. Noble; 5, J. O. Lea.

Class 9 (Youths).—1, H. McManus; 2, H. Wood.

Amateur Champion of England.—J. O. Lea.

Open Championship.—G. P. Bragg-Smith.

Models Rising from the Ground.—1, R. Ding; 2, H. Sayers.

Special Prize (best all round flight).—C. Davies (Twining).

The club is arranging an aviation meeting early in June, and also three different glider and model competitions during the summer.

The quality and low price of the goods shown by Messrs. Ding, Sayers, and Co. and Messrs. Twining has determined the club to place the names of these firms on their list for the guidance of the new section being formed of "Associate" members.

### Conisborough and District Model Ae. Soc. (18, CHURCH ST.).

SOME good model flying was seen at the meeting of the club held on the Park Road Ground on Easter Monday. There were ten competitors, and a good many of them brought two models. Three competitions were decided; that for the longest flight, open to all, was won by Mr. F. J. Wright, with 370 ft., and he took the first prize of a silver medal. The second prize, twin model propellers, was taken by G. Askew, 350 ft., while the third prize, a geared motor, was awarded to C. C. Allport, 292 ft. In the second competition, for longest flight open only to members who had not won a prize, the first prize, a silver medal, went to H. Brocklesby, 160 ft., while the second prize, twin model propellers, was won by G. C. Cowells, 109 ft. In the third competition, for landing nearest a given spot, 100 ft. from the start, a special prize of a geared motor was won by Mr. F. J. Wright, while Mr. J. E. Greathead was placed second.

### East London Aero Club (ALEXANDRA HOTEL, STRATFORD, E.)

THE last two flying meetings have been very successful, the kite section figuring most prominently. The next meeting will be held on Saturday afternoon, May 6th.

On Easter Sunday the members of the cycling club, run in conjunction with the E.L.A.C., visited Brooklands, and were well rewarded by witnessing a splendid day's flying.

Readers residing in the locality and interested in aviation are reminded of the facilities offered by the club; the workshop, library and meetings.

Discussions upon interesting subjects are conducted periodically, and papers are frequently read.

Flying and scale model-building is encouraged by competitions and exhibitions.

Several more members are required by the Tower Hamlets branch before the workshop can be acquired, and readers residing in the Mile End and Bow district are requested to write to Mr. E. A. Sissons, hon. sec., Alexandra Hotel, Stratford, E., for particulars.

### Kite and Model Aeroplane Assoc. (27, VICTORY RD., WIMBLEDON)

THE next lecture will be given at the Northampton Polytechnic Institute, Clerkenwell, on May 19th at 8 p.m., when Mr. S. F. Cody will deliver a lecture entitled "How I learnt to Fly," illustrated by animated pictures. Free tickets can be had by applying to the hon. sec., Mr. W. H. Akehurst.

### Sheffield Model Aero Club (35, PENRHYN ROAD).

THE above club held their first model flying competition on Easter Monday at the cricket ground opposite Ecclesall Church, which proved quite a success, with a big attendance of the public. Some fine flying was accomplished, and a great amount of excitement was caused when one of the models of Mr. A. D. Coakes, of Edensor, Bakewell, flew into one of the adjoining trees after a flight of 408 ft. A 1-oz. model was flown by Mr. A. D. Coakes in the stability event, which accomplished a fine flight of 250 yards. Following is a list of events:—

1. Longest distance flown.—A. D. Coakes, 408 feet; H. Slack, 373 feet; W. R. Blake, 214 feet.

2. Longest time in the air.—A. D. Coakes, 15 seconds; H. Slack, 14 seconds.

3. Stability.—A. D. Coakes, W. R. Blake, H. Slack.

4. Steering to given point.—A. D. Coakes, W. R. Blake, H. Slack.

5. Best speeds over 50 yards.—W. R. Blake, A. D. Coakes, H. Slack.

6. Point-to-point.—H. Slack, A. D. Coakes.

Each member was allowed three tries in each event. There were about ten models entered for the competition but owing to sudden gusts of wind some of the models were driven into the trees and smashed up. Mr. M. D. Manton officiated as judge. The prizes were awarded for the highest number of marks as follows:—A. D. Coakes, 16; H. Slack, 10; W. R. Blake, 8.

The secretary, C. F. W. Cudworth, of 35, Penrhyn Road, had a scale model of a Blériot on view, great interest in it being shown.

The members hope to hold another competition on a larger scale on Whit-Monday.

### SCHOOL AERO CLUB.

#### Arundel House School Ae.C. (15, ARLINGTON ROAD, SURBITON).

ON Easter Monday the club was ably represented at the model aeroplane contest, organised at Kidbrooke by the Aero Models Association, by R. F. Mann, who entered his Mann monoplane No. 31. In the Point-to-Point competition he completed the course in three flights, for which he was awarded first prize. During the afternoon he delighted both competitors and onlookers with a number of demonstration flights, in one of which the model flew out of the aerodrome and finally descended in a field over a quarter of a mile distant. In the course of another flight the model collided at full speed with a maze of telephone wires, but emerged quite uninjured. It may here be said that a quarter mile is by no means the limit, flights of nearly 1,800 ft. having been accomplished in a gentle breeze.

Both the prizes won by R. F. Mann at Acton on the 15th inst. were first prizes, and not one first and one second, as reported in error in FLIGHT of last week.

## IMPORTANT BRITISH WAR OFFICE DEVELOPMENTS.

READERS will not be slow to recognise the significance of recent official doings at the Hendon flying grounds, and of forthcoming arrangements in contemplation there. On Tuesday last the Under-Secretary for War paid a visit to the ground, at the suggestion of Mr. Arthur Du Cros, M.P., and while there—although a very strong and tricky wind was blowing—he expressed a desire that Mr. Grahame-White should take him for a flight then and there. A most impressive performance was accomplished, the full effects of which are likely to be of even more direct bearing upon the immediate future than most people would imagine possible from a comparatively brief and totally unrehearsed event of this character.

Also at the instance of the Parliamentary Aerial Defence

Committee and their energetic hon. sec., Lord Haldane has consented to receive a deputation, which will urge far speedier official development of military aviation; and it has, moreover, been arranged that Lord Haldane himself will accompany some of the leading members of the Army Council, as well as some couple of hundred Members of Parliament, to a special demonstration to be given at Hendon next Thursday. On that last-mentioned occasion a striking programme is to be carried through, including the assembly and dismantling of aeroplanes, the conduct of reconnoitring and dispatch carrying flights, the carrying of Air Battalion officers suitably equipped for observation and map-making work, and perhaps also some experiments in bomb throwing at a stationary target while under way.

# BRITISH NOTES OF THE WEEK.

## London to Paris with a Passenger.

M. PRIER, not content with having succeeded in flying from London to Paris without a stop, is now contemplating the repetition of this performance, but this time with a passenger on board his Blériot monoplane.

## Naval Aviators at Eastchurch.

LIEUT. C. R. SAMSON, R.N., and Lieut. Arthur M. Longmore, R.N., two of the four Naval officers undergoing a course of instruction in flying on the Royal Aero Club Flying Grounds at Eastchurch, have succeeded in passing the necessary tests for an aviator's certificate issued by the Royal Aero Club in accordance with the rules of the F.A.I.

It will be recalled that through the generosity of Mr. F. K. McClean the Royal Aero Club were able to place two biplanes of the latest pattern at the disposal of the Admiralty for the use of Naval officers, and Mr. C. B. Cockburn, a member of the Club, has most kindly given his services as instructor to the officers.

## Flying at Southport.

DEFINITE arrangements have now been made by the Coronation Gala Committee at Southport with Mr. Grahame-White to give a series of exhibition flights on June 22nd, 23rd, 24th and 26th, there being no flying on the Sunday, but a special display on the Friday evening. Mr. Grahame-White will take two machines to Southport and a qualified aviator besides himself, and flying will only be indulged in between the hours of 2 to 5, except on Friday, when there will be the evening display.

## The Postponed Brooklands-Brighton Race.

A GUSTY wind, which mostly blew at a velocity seldom less than 30 miles an hour, was responsible for the postponement of the Brooklands to Brighton race which was to have taken place last Saturday. Four aviators waited at Brooklands in hope of a start being made, and a great crowd gathered at Brighton Pier to see the finish, but all in vain. It was decided, therefore, to postpone the

competition until to-day, Saturday. The conditions remain the same, except that aviators may choose their own time of starting.

## Memorial to Aviators at Eastchurch.

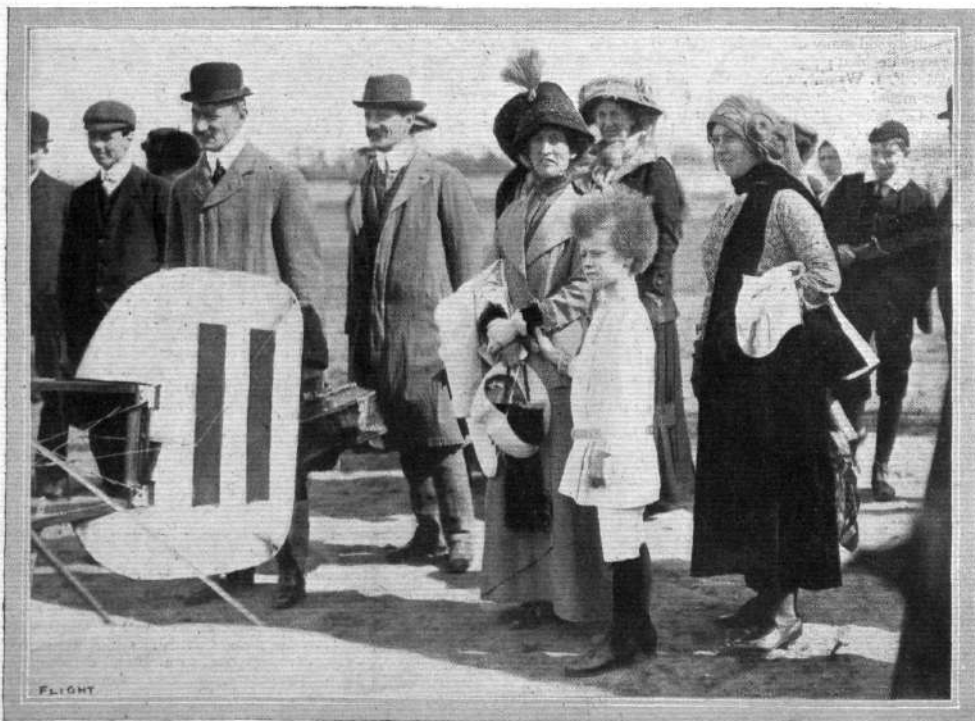
VERY appropriate is the movement initiated by Mr. J. T. C. Moore-Brabazon and the Hon. Maurice Egerton for the provision of a memorial to the Hon. C. S. Rolls and Mr. Cecil Grace at Eastchurch. It is proposed that the memorial should take the form of a stained glass window in Eastchurch Church. As our readers are aware, both the aviators commenced their flying at Eastchurch, and it is felt that no more fitting place than the village could be chosen for some permanent memorial of their work. The cost of a two-light window would be about £60, and contributions may be sent either to the rector, the Rev. K. Henry Dickson, Eastchurch Rectory, Sheerness, or to the Postmaster, Eastchurch.

## Mr. N. C. Neill was the "Feather-Weight."

IT WAS Mr. N. C. Neill, the 20-stone "feather-weight," who last week was carried by Mr. Cody on his biplane at Laffan's Plain, and who is well known in connection with racing at Brooklands, not, as stated by our correspondent, Mr. Ernest C. Bucknall, who was only a witness of the incident.

## A Curious Accident in India.

WHILE giving a demonstration on his Humber monoplane at the Bombay Oval on the 26th ult., Lieut. Dawes decided to fly over to Malabar Point, about 4 miles away, but in turning he failed to notice some telegraph wires alongside the Bombay-Baroda Railway, which skirts the ground, until he was close upon them. There not being room enough to rise Lieut. Dawes was compelled to come down on to the railway line, which he did successfully. Just then, however, a goods train came along, and although it was only proceeding very slowly and the driver was signalled to stop, he apparently did not understand, with the result that it smashed into the monoplane. The aviator jumped clear before the collision took place, and so escaped serious injury, but the monoplane was seriously damaged, although the engine itself escaped.



Mrs. Asquith, Miss Asquith, and Master Asquith watching Mr. Gustav Hamel preparing his Blériot monoplane on Saturday at Brooklands, in readiness for the flight to Brighton.

## FROM THE BRITISH FLYING GROUNDS.

### Brooklands Aerodrome.

**Avro School.**—Messrs. A. V. Roe and Co. have added a genuine Farman driven by a Gnome to their school, for pupils who prefer this type of machine, which is to be used for carrying passengers as well.

Sunday morning Lieut. Beatty and Conway Jenkins had the Avro biplane out, and each flew several straight flights, and were carrying each other as passengers, in spite of a nasty wind.

Quite a number of people turned up on Sunday afternoon, although there was a tricky wind blowing. Pixton, as usual, with his disregard of the elements, and in order to lessen their disappointment, gave a clever display, flying several circuits.

Monday morning Conway Jenkins proved himself a very promising flyer, for at his second attempt on the Avro biplane he covered several circuits and made figure eights, landing quite well. There are now several pupils of the Avro School who are competent to go for their certificates if they can manage to get to Brooklands during a decently fine spell.

Lieut. Parke, who last week gave such an able display on the Avro biplane during his first three lessons, owing to a previous arrangement went through the formal tests for his brevet on a Bristol biplane.

In the evening Mr. Jenkins put in some pretty work on the Avro biplane, finishing with *vol planés*, while Pixton was flying around the track and district for an hour and ten minutes, preparing himself for the Brighton flight.

### Laffan's Plain.

On Easter Monday Mr. Cody was the only one to make a flight in connection with the Manville competition. He flew for 9 minutes, at the end of which time it was found necessary to descend owing to a serious leakage in the petrol tank caused by a faulty rivet.

After this day unfavourable weather conditions prevented any flying other than that of the kites, which were in action daily.

### London Aerodrome, Collindale Avenue, Hendon.

**Blériot School.**—From Tuesday to Saturday of last week the very strong winds which prevailed did not allow any work to be got through.

On Monday last, much to the pupils' delight, the school machines were able to go out, and morning and evening a good amount of work was done.

Messrs. Champion, Henderson and Salmat were circling the grounds; Mr. Abercromby, who, by the way, is making very rapid progress, was doing some very good straight flights; whilst Messrs. Parr, Psalty and Gordon Jones were indulging in some rolling practice.

A new American pupil, Mr. Dycott, of New York, has now joined the school, and received his first lesson in the hangar.

Mr. Sopwith has bought one of the latest type two-seater Blériot monoplanes with 70-h.p. Gnome engine, which he will take with him to America. Both he and Mr. Hamel have recently tried this type with M. Leblanc at Pau and were delighted with it.

**Grahame-White School.**—Adverse climatic conditions were responsible for the very little practical flying that took place at the Grahame-White School during the past week. The wind abated sufficiently, however, on the evening of Monday the 25th to allow the pupil Travers to make straight flights on the school Farman. On the following day the instruction staff were on the ground *a bonne heure* in order to take advantage of the early morning calm. After a preliminary test flight of two circuits by Clement Greswell, Travers took the levers and practised straight flights. Towards breakfast time the wind rose again and continued to blow at an average velocity of 30 miles per hour throughout the day.

During the afternoon a visit was paid to the school by Mr. Arthur Du Cros, M.P., and Col. Seely, M.P., for the purpose of inspecting the various types of aeroplanes. Although the wind was still very strong and gusty, Col. Seely said he would like to make an ascent with Mr. Grahame-White. The Grahame-White "Baby" biplane was wheeled out, and after a short test flight the Under-Secretary for War took his seat behind the pilot. The flight, although brief, must have been very exciting, and Col. Seely was considerably impressed by his experience.

### Salisbury Plain.

WIND and rain put flying out of the question on Wednesday or last week and also on Thursday morning, but in the evening M. Jullerot and Mr. Pizy brought out a couple of Bristol machines and both went for a spin round Larkhill, Fargo and Rolleston Camps. The pupils, Messrs. Fleming and Turner, then took over the control of the machines and started off to fly for their certificates. They completed half the tests and then decided to postpone the completion of them. On Friday the weather was again too rough for flying, but the time was spent in putting in useful work in the sheds. The weather on Saturday was much better, and Mr. Pizy was first at work, followed by M. Jullerot. Both made good flights, and then Mr. Fleming set out to complete the tests for his certificate, a task which he easily accomplished. Mr. Stanley White and M. Jullerot were the official observers. In the evening Mr. Pizy was in the air again, but the breeze was very treacherous, and so the flying was curtailed. The gusty wind on Sunday also necessitated flying being postponed until the evening, when Mr. Turner completed the test for his certificate. The conditions on Monday were much better, and a great deal of flying was seen, both Mr. Pizy and M. Jullerot taking their pupils up as passengers, while Mr. Philpot was



Mr. Graham-Gilmour preparing his Bristol biplane on Saturday for the proposed flight to Brighton, with a few of the 5,000 visitors to Brooklands looking on.

"Flight" Copyright.

at work at a good height and Mr. Hotchkiss, a pupil, indulged in straight flying for the first time. In the evening M. Jullerot was up on the new military extension biplane, in which he carried several pupils, and also gave one of the mechanics a treat by taking him up to a height of 900 ft., then coming down by a fine *vol plané*. Rising again, he went off round Larkhill, Fargo Camp and Stonehenge at

a height of 2,500 ft. Afterwards M. Tetard took over the machine, and rose to an altitude of 2,000 ft. Tuesday morning was dull, but it was found that there were a good many "pockets" in the air, and so no lengthy flying was done. During the day a new racing biplane arrived, with which tests will shortly be made.

## NEW PILOTS AT THE "BRISTOL" SCHOOLS.

IN the matter of having pilots passed for their certificates, the British and Colonial Aeroplane Co. have just surpassed all previous work in Great Britain. During last week end, not only did they have three pupils pass through for their brevet flights in three days, but one pupil was able to be certified at his third flight, this latter being a world's record.

On Saturday at Salisbury Plain, Mr. Henry R. Fleming took his brevet in exceedingly fine style, his flight showing promise of very great things to come. Mr. Fleming is the type of man of which aviators are made. Though only 26 years old, he has already had an adventurous career. He has been lumbering in Canada, cattle ranching and broncho busting in the Wild West, and fruit farming in the Sacramento Valley near San Francisco, to mention only a few of his experiences. He was first attracted to aviation by seeing Mr. Glenn Curtiss flying down the Hudson River, and came to England for the purpose of taking a course under the "Bristol" pilots.

On Sunday Mr. Charles C. Turner accomplished his brevet flight under somewhat unfavourable circumstances. There was a slight breeze when he started towards sun-down, but it appeared to be falling, and the only unhelpful indication was a belt of stormy looking clouds coming up from the west. Before he had been in the air very long, however, Mr. Turner realised that it would depend entirely upon the good will of the wind whether he was able to accomplish his brevet flight successfully. By dint of hard work and clever banking, however, he was able to finish in excellent style, and received a great ovation upon alighting. Mr. Turner is very well known as a journalist and author, having for some time past specially devoted himself to aeronautical subjects. He has taken part in a number of balloon flights, notably the trip from London to Sweden in 1907 with Mr. Gaudron, when an attempt to break the record was made under the auspices of the *Daily Graphic* newspaper, and again in 1908 from London to Russia, a distance of 1,117 miles, a British balloon record, again under the auspices of the *Daily Graphic*, with Mr. Gaudron and Captain Maitland.

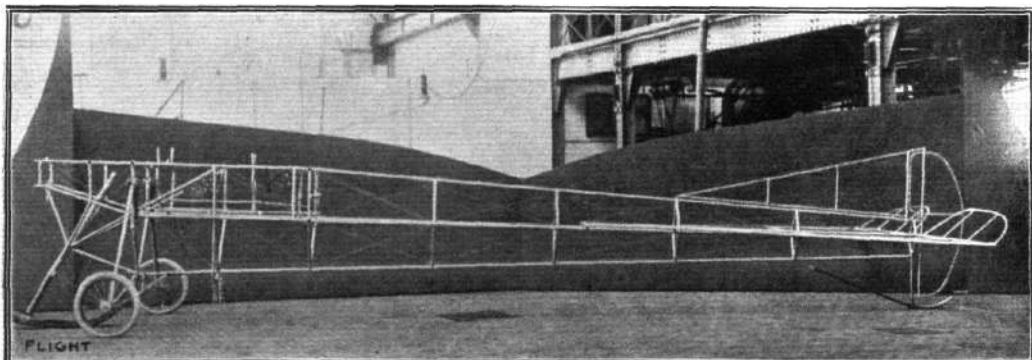
The greatest feat of all accomplished by the British and Colonial Aeroplane Co., however, was the passing of a pupil at his third flight. This occurred at Brooklands on Monday, the pupil being Lieut. Parkes, R.N. Lieut. Parkes, as soon as he joined the Bristol School, displayed an extraordinarily quick grasp of the control of an aeroplane, and after only one passenger flight was allowed to take the machine for a straight flight. To the amazement of all who were watching him, however, instead of making the usual straight flight from one end of the ground to the other, he immediately took the machine up to a considerable height and did a complete circuit. On Monday morning he was again given the machine, when it was supposed that he would make another simple circuit, but he confounded everybody at Brooklands by carrying out a splendid "figure of eight" and landing with a *vol plané*. The



The Countess Nora Lützow as passenger with M. Maurice Tabuteau on the Bristol military biplane at Badminton House, April 17th, referred to in last week's issue.

same evening this remarkable pupil gained his pilot's certificate, flying very brilliantly in a strong wind, and concluding with a fine *vol plané*. This is, we believe, a world's record.

All these flights were carried out on British-built Bristol biplanes, exactly similar to those purchased by H.M. War Office, and fitted with Gnome engines.



TUBULAR STEEL WORK IN AEROPLANE CONSTRUCTION.—The above photograph is an excellent example of a tubular steel frame for a monoplane body, the machine illustrated being the latest R.E.P. Forming a background to the body are the wings.



## FOREIGN AVIATION NEWS.

### Doings at Rheims.

DURING the past week a very great deal of flying has been seen both at the Hanriot and also at the Deperdussin schools at Betheny. On the morning of the 21st inst., for instance, Vasseur was flying on his Hanriot for two hours, while during the evening he was up for three hours during which he flew over Rheims and the environs. Marcel Hanriot was also out on the small "Dragon-Fly," while his father was flying for two hours with Count d'Allincourt on a 100-h.p. Clerget-engined monoplane. Lenfant, the chief pilot of the Hanriot School, was also out with passengers, and carried two from Betheny over Vitry and the Bourgogne Woods to Mourmelon and back. Count d'Allincourt was flying for an hour by himself, while Wittcz, on his Hanriot monoplane, flew round the Betheny Clock Tower. At the Deperdussin School, Aubrun and Pierre Marie were practising, while Pascal, the chief instructor, was giving lessons to pupils.

### Practice at Issy.

DURING the past week Collicx has been practising with the Voisin-Canard and also with a two-seated biplane of the military type, while Anzani and Darioli have been testing their Anzani-engined Blériot, the former having a 5-cyl. motor and the latter a 3-cyl. one. Another monoplane which has been out is the Roux, while Deletang has made several short flights on the new Clement-Bayard aeroplane illustrated below.

### Japanese Officers at Buc.

ON the 22nd inst. a number of Japanese officers paid a visit to the Maurice Farman School at Buc and witnessed several demonstration flights made by Captain Eteve and Lieuts. Lucas and Binda, and afterwards Mr. Maurice Farman took each of the officers for a short trip. Barra also made some speed tests on a racing machine.

### The R.E.P. School at Buc.

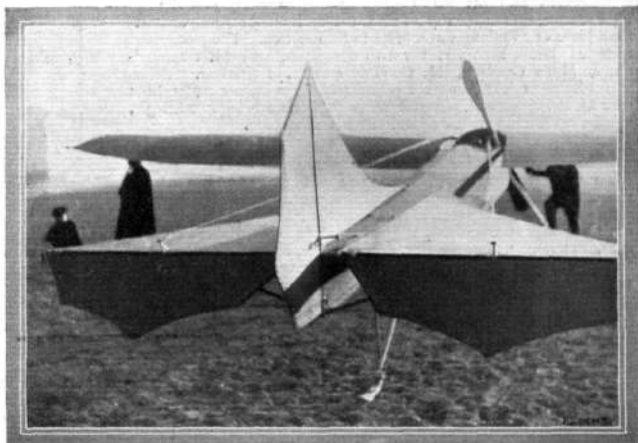
CAPTAIN WOOD, of Messrs. Vickers, Ltd., is proving as much at home at the wheel of an R.E.P. monoplane as he used to be when flying a double-decker. On the 20th inst., he carried several passengers at a height of 300 metres, and this performance was duplicated on the following day. Busson and Amerigo also made several good trips, the former, on the 21st inst., flying over the neighbourhood of Versailles, while, on the previous day, he was flying for an hour round about Buc.

### Mr. Sopwith at Pau.

ON the 19th inst. Mr. T. Sopwith, accompanied by M. Gustav Hamel, arrived at the Blériot School at Pau and had a series of flights on a 70-h.p. Gnome-engined Blériot, which he proposes to use during the coming season.

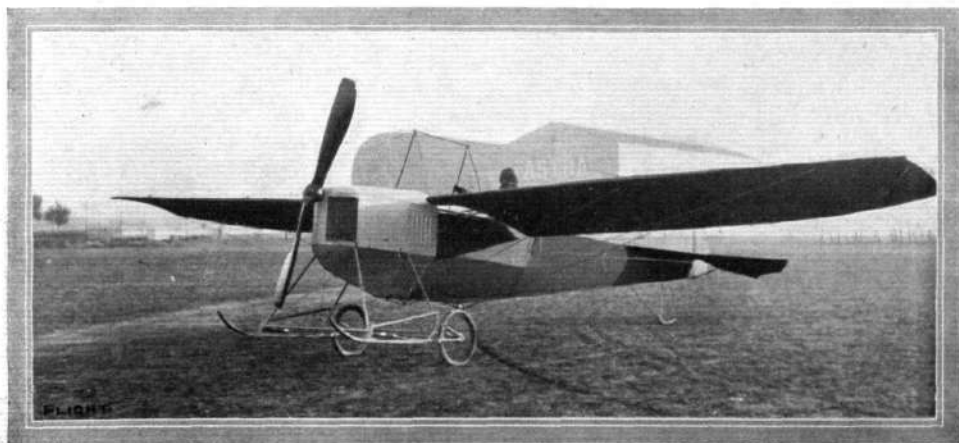
### Activity at Juvisy.

SOME excellent flying was seen at Juvisy on Monday when early in the morning Champel, having his pupil Pluntz on his



The tail of the new Clement-Bayard monoplane.

biplane, left the aerodrome and was absent for two hours, during which he passed over Buc, St. Cyr, and Villacoublay, having covered a distance of 150 kiloms. In the evening he made another excursion, this time of an hour's duration over Longjumeau, Monthery, &c. In the afternoon Cassis and Didier on a Maurice Farman flew over to Buc, while Ladougue and Lieut. J. d'Aiguillon on a Goupy were also flying across country. Over the aerodrome itself good flights were also made by Weiss, Gaudart, Gassier and Verdier on their various machines.



THE NEW CLEMENT-BAYARD MONOPLANE AT ISSY.—Weight 400 kilogs., 20 m. surface, R.F. propeller. She is fitted with a 4-cyl. 45-h.p. Clement-Bayard motor.

## M. Leon Barthou Honoured.

As a mark of their appreciation of the services which he has rendered to the Club and the movement generally up to the time of his resignation recently, the Aero Club of France has asked M. Leon Barthou to accept an Honorary Vice-Presidency. At the same time it has been decided to present the Club's gold medal to him.

## A Breguet Biplane for the Russian Army.

On the 20th inst. Capt. Alexandroff paid a visit to M. Breguet's headquarters near Douai, to witness a Breguet biplane built for the Russian Army put through its paces. With M. Breguet himself at the wheel the machine had no difficulty in passing the tests laid down, and Capt. Alexandroff expressed himself thoroughly satisfied with the result.

## Sommer takes his Family for a Flight.

CONTINUING his series of passenger-carrying experiments M. Sommer, on the 19th inst., took his family and several relations for a jaunt of 20 minutes at a height of 80 metres. The passengers included Mme. Sommer, her two daughters, and M. Sommer's sister, Mme. Geoffroy, M. Geoffroy and M. Larmoyer. Afterwards Sommer again took six passengers for a short circular flight over his flying ground, the live weight this time being 450 kilogs., while the oil and petrol weighed another 100 kilogs.

## Two New Sommer Monoplanes.

ON the 23rd inst. Sommer was testing two new monoplanes which he has just completed. The first was a single-seater, built mainly for speed, and over a closed circuit it is anticipated, as a result of its preliminary trials, that it will reach a pace of 110 k.p.h. The second monoplane has the two seats arranged in tandem, and is said to be capable of doing 90 kiloms. an hour, while the fuel and oil tanks are large enough to contain a three hours' supply.

## Cross-Country Flying on a Vinet Monoplane.

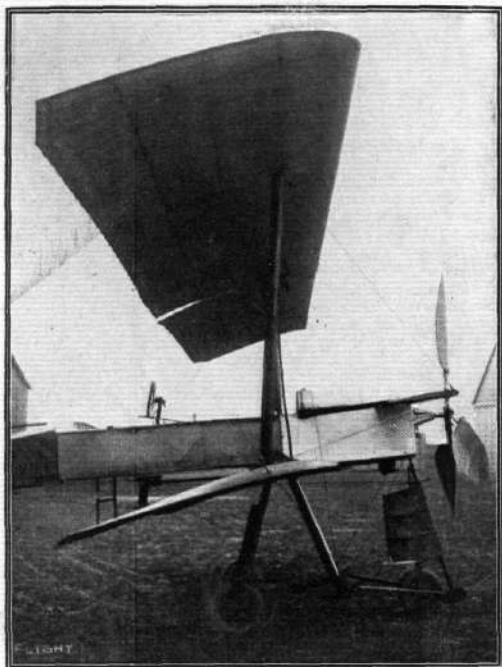
MOUNTING his Vinet monoplane on the 20th inst., Liger set out to fly from Jargeau to Paris. He passed Orleans at a height of 1,000 metres, but soon after found the squally winds too trying, and therefore came down at Artenay, having traversed 40 kiloms. in 28 mins.

## Leprince on a Nieuport Monoplane.

ACCOMPANIED by his friend Lafosie, Paul Leprince, on his Nieuport monoplane, flew over Rheims and round the Cathedral on the 21st inst., his speed during the trip working out to an average of 95 miles an hour.

## A Viale-engined Blériot.

USING a Blériot monoplane to which he has fitted a five-cylinder Viale engine, Dancourt has made several lengthy cross-country flights in the neighbourhood of Meru. On the 20th inst. he was flying over Lormaison, Marivault, Sandricourt and Meru, and

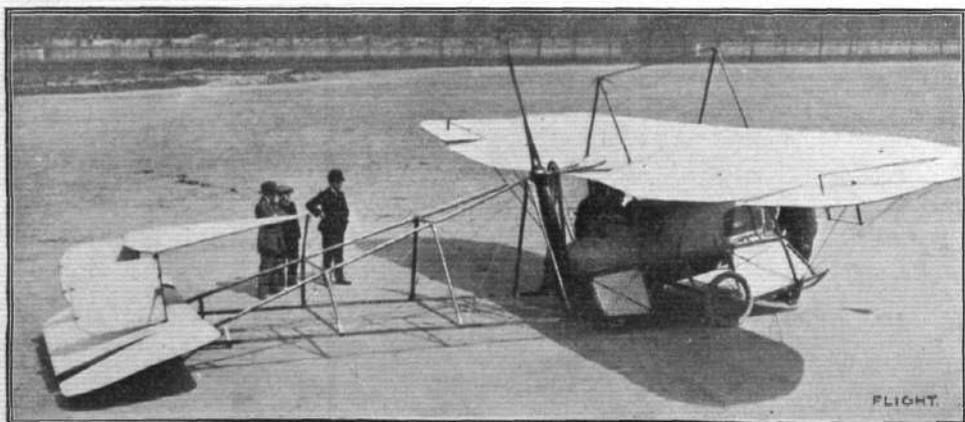


THE LATEST BREGUET.—View showing the bows of one of these machines fitted with a Breguet flexible propeller gear-driven at slow speed from a Gnome rotary engine.

covered a distance of 50 kiloms. in 33 minutes, his height ranging up to 400 metres.

## Flying Over Copenhagen.

DURING the course of a flight on the 20th inst., which continued for 1 hr. 13 mins., Cozic several times passed over the city of Copenhagen, and thus won a prize of £80. While he was attempting to land, the machine was struck by a gust and collided with an aeroplane belonging to Svendsen, with the result that both machines were badly damaged, although fortunately the aviator escaped practically unhurt.



The latest Pischoff, illustrated in the above photograph, is a very good example of an underhung load in monoplane design, and also of the use of a motor car type body for the pilot and passenger. Indeed the resemblance goes even further than the arrangement of the seats, for the engine drives a propeller-shaft passing to the rear, and there is a final chain transmission to an overhead propeller-shaft situated on a level with the wings. Constructionally this machine is very interesting on account of the method of introducing a central propeller behind the main planes of a machine that has an outrigger for carrying a tail.

**Nice to Corsica Race.**

IN an attempt to win the prize offered for a flight from Nice to Corsica, the Marquis de Villeneuve-Trans left Nice on Friday, the 21st inst., and proceeded out to sea, but after being in the air for three quarters of an hour he found he could not keep on his way owing to the fog, and therefore returned to Nice. A fresh attempt was to have been made on Sunday, but the large crowd which assembled on the flying ground considerably hampered the aviator's movements, and he decided not to start.

**Another Long Flight by Prince Henry.**

ON Saturday last, Prince Henry of Prussia beat his own duration record by staying in the air for a period of 40 minutes, during which he covered a distance of 33 miles, then having to descend owing to the motor giving trouble. The flight was witnessed by five regiments who were drilling at the time, and Prince Henry maintained an average altitude of 500 ft.

**Town to Town Flights in Germany.**

FLYING against the wind the aviator Wittenstein succeeded in flying from Munich to Augsburg, a distance of 55 kiloms., in 40 minutes, but the return journey with the wind in his favour only occupied half an hour.

**Encouragement in Germany.**

IN addition to giving two prizes of 5,000 and 4,000 marks respectively in connection with the German National Circuit, the Prussian Minister of War is offering a prize of 5,000 marks for the flying circuit in Saxony, while he will also purchase the winning machine for 28,000 marks, provided it is entirely German built and performs certain tests. The Prussian War Office is also giving a prize of 5,000 marks in connection with the flying week to be held on the Upper Rhine.

**More Flying by Bouvier at Tunis.**

DURING the visit of President Fallières to Tunis on the 19th inst. Bouvier, on his Gnome-engined Goupy biplane, made several flights, and while the President was proceeding to the Army

manœuvres in his motor car Bouvier flew overhead. On his descent the President invited him to the official lunch on the following day, at El Djem, 280 kiloms. from Tunis. Bouvier decided to keep this appointment by aeroplane, and although it was raining hard he set off at 9 o'clock in the morning. His first stop was at Pontinville, after flying 25 kiloms., while a second landing was necessary at Enfidaville, 126 kiloms. from Tunis. After about an hour the torrential rain ceased, and Bouvier once more took the air, but only to get as far as Sousse, where he was obliged to come down for the night, having covered altogether 148 kiloms.

**American G.B. Representatives.**

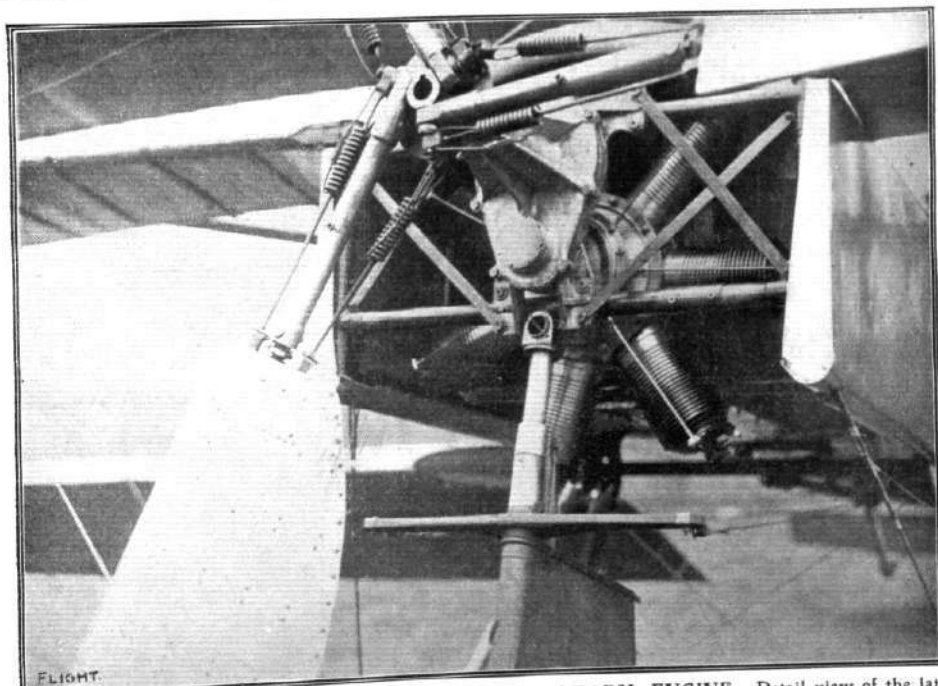
ACCORDING to a cable from New York, the Aero Club of America has decided to abandon the competitions which were being arranged to take place in Belmont Park during May in order to select the American team for the Gordon-Bennett Race. The Club has, instead, delegated the task of selecting the team to its Committee.

**Flying in Cuba.**

IN a letter received by M. Norbert Chereau from Mr. St. Croix Johnstone the latter states that on the 9th inst. he was at Mantangas, a town in Cuba, about 60 miles from Havana. During an exhibition flight there on his Blériot he was in the air for 19 mins. 52 secs., and several times glided to within a few feet of the ground and then rose again. He also went over the harbour and a small portion of the city. The crowd was a large one and very enthusiastic at this performance, which was the first flying they had seen. Mr. Johnstone was, at the time of writing, arranging to fly from Key West to Havana, a distance of 105 miles over water.

**A Long Flight in Argentina.**

SOME long flights have been made in Argentina by Andre, who is using a Farman biplane. On Sunday afternoon he made a flight of 300 kiloms. from Mar del Plata to Ferrari, passing by Marpu, Dolores, and Charcomus, and on the following day he was to continue his journey to Buenos Ayres. Cattaneo also is indulging in cross-country flying on his Blériot, and on Monday was to have covered a circuit of 300 kiloms.



GEAR DRIVING A PROPELLER FROM A GNOME ROTARY ENGINE.—Detail view of the latest Breguet, showing how a Gnome rotary engine is used to drive a Breguet flexible propeller at reduced speed. The blades of the Breguet flexible propeller are hinged to the boss, and are anchored by springs so arranged as to allow the blades to fold back a little towards the engine under excessive pressure. The purpose of this mechanism is to diminish the stresses due to gyroscopic and centrifugal force resulting from sudden changes of the attitude of the machine in flight.

## The European Circuit.

EVERY effort is being made by *The Standard* to honour the aviators taking part in this great International event, during the period in which they will be in England. Details of the arrangements will be published later, when they have been approved by the commission controlling the circuit, each country traversed being represented by two delegates and France by three. An important and very drastic rule is that any competitor arriving in a section between the hours of 9 p.m. and 3 a.m. will be timed officially as having arrived at 3 a.m. Right of entry is personal, and restricted to aviators who actually take part. Manufacturers may enter a certain number of aviators blank in advance, but before these hold good each must be signed by an aviator designated by the manufacturer and firm that the entry becomes personal to him in regard to all rights and duties attached thereto.

The carrying of any photographic or cinematographic apparatus on the machine during the flight is forbidden.

Entrants can only compete on machines on which, by June 15th next, tests necessary for the obtaining an F.A.I. aviator's certificate have been passed by some aviator. The actual competitor need not have actually obtained his certificate on the particular machine which he uses.

Although the course will be marked out, the following of this strictly is not obligatory, so long as the landings at the halts and sections indicated in the programme are made, these being obligatory.

### Paris to Pau by Aeroplane.

ON Saturday morning, two aviators set out from Paris to fly to Pau, in an attempt to win the cup offered by the Aero Club of Bearn. Bobba on a Goupy biplane started off from Juvisy, with the intention of going without a stop to Pau. He flew over to Issy for the official start, and was timed away from there at a quarter past seven. Orleans was passed at five minutes to nine, while at ten o'clock Tours had been left behind. Another hour passed, and the aviator, being then at Chatellerault, decided to come down. Unfortunately, the ground was much rougher than he anticipated, and the machine suffered so badly in the landing that it was impossible for Bobba to continue.

At 20 minutes to 1 Vedrines set out from Issy on his Morane monoplane. At 2 o'clock he was over Orleans, and then finding the wind was very trying he decided to land when he reached Poitiers, after being in the air for 5 minutes over 3 hours. He remained there the night, and a large crowd assembled early the following morning to see him make a fresh start for Pau. He was away at a quarter to seven, and all went well until Eglisottes, 28 kils. from Libourne, was reached, where a stop was necessary owing to a sparking plug giving out. He landed at 8 o'clock, and after a delay of 2½ hours started off afresh, but only got to Mont Fourat, close

by Coutras, where another stop was necessary from the same cause. At half-past three in the afternoon he was under way once more and then got on as far as Captieux, where he determined to stop the night. The last 123 kiloms. were covered in 50 minutes. Although the weather on the following morning was unfavourable, the rain being very heavy, he determined to make an effort to complete his journey, and arrived at the aerodrome at Pau at five minutes to seven. His net time for the complete journey of about 800 kiloms. was 6 hrs. 18 mins., and during the major portion of the journey his speed was in the neighbourhood of 125 k.p.h. During the last section, however, he only averaged 70 k.p.h.

### Tests With the Etrich Monoplane.

SOME interesting tests were made recently with an Etrich monoplane, built for the Austrian Army. The machine was first of all flown with a passenger on board for 2 hrs. 33 mins. while the wind was blowing at a rate of 4 to 5 metres a second. Afterwards the machine was dismantled, an operation which occupied 8 mins., while in 25 mins. the machine was once more ready for flight, and, in fact, was taken for a trial. The specification under which the machine was built stipulated that it could be dismantled in one hour and be again ready for flying within two hours. Herr Illner has also demonstrated the controllability of the Etrich monoplane by flying in small circles, during some of which the planes were at an angle of 30 to 35 degrees to the horizontal, while as a conclusion the aviator took his hands from the steering wheel and let the machine proceed on its way some distance of its own accord. The machine in question is seen in our photograph on this page.



## AIRSHIP NEWS.

### "Parseval VI" Comes to Grief.

ASCENDING at Johannisthal early in the morning on the 21st inst., with ten persons on board, the dirigible "Parseval VI" started off on a journey to Amsterdam, among the passengers being two Dutch military officers. It had been intended to start on the previous day, but the wind was too strong, and, even when the start was decided upon, the breeze was much more than was desirable. After a journey of about eight hours, during which 160 miles had been covered, the airship was in the neighbourhood of Hanover when a descent was rendered necessary in order to adjust the motor. In the landing operations, some of the tackle became entangled in a tree, and, in order to prevent any worse happening, the Commander, Lieut. Stelling, pulled the ripping cord, and brought the airship down with a rush. Fortunately, all the passengers were landed safely, and the airship was packed up and returned to Bitterfeld by rail for repairs.



Latest model of the Etrich Monoplane, which has just been acquired by the Austrian Army.—These machines are constructed by the Motor-Luftfahrzeug-Gesellschaft of Hutteldorfstrasse, Vienna. In our photograph Oberlieutenant Miller, who has charge of the machine, is in the pilot's seat; in front the Army delegates, Rittmeister Schmidt, Captain von Petroczy, First Lieutenant Blaschke, First Lieutenant Stohanzl, the Managing Directors of the Motor-Luftfahrzeug-Gesellschaft, Kommerzialrat Castiglioni, Director of the Austro-American India-Rubber Manufacturing Co., Ltd., of Vienna, and Director Fischer of the Oesterreichische Daimler Motoren A.G.; and next to the propeller Mr. Illner, the Etrich pilot.



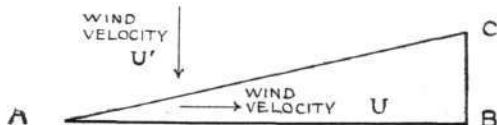
## AERIAL GUNNERY.

By J. HIRST, B.A.

THE article translated by Commander R. H. Keate, R.N., from the *Rivista Marittima*, and published in FLIGHT No. 112 (February 18th), dealing with the use of aeroplanes in naval warfare, will no doubt have been perused with considerable interest by your numerous readers. Recent achievements in America have, of course, brought the problem of launching and landing at sea out of the region of theory into the sphere of practice. Indeed, Curtiss' hydro-aeroplane successes indicate that special launching and landing stages on the decks of ships will prove by no means essential, long before the arrival of the elusive helicopter.

The bomb-dropping problem, however, is still in the theoretical stage, at least so far as scientific aiming is concerned. The only treatment of the subject which I have ever seen in print appeared in *Punch* some two years ago. A military individual of Teutonic appearance was represented as having dropped a bomb from the car of a dirigible with a view to destroying London! His remark "Bother! I've missed it," seems a trifle inadequate. As I have been working at the subject for some time, I was particularly interested to read Claudio Piumatti's treatment of it, and would like to offer a few criticisms and suggestions.

First, as to the method for obtaining the speed of the aeroplane through still air, called  $V$  in the notation of the article. The value,  $u$ , of the component of wind velocity in the direction of flight is assumed, though it would be a difficult quantity to determine if the distance,  $A B$ , through which the aeroplane flies were considerable. It is not, however, sufficient to know the component in the direction of flight, since the component at right angles would considerably affect the problem. Thus if  $u'$  denote the component of the wind in a direction perpendicular to  $A B$ , then in flying from  $A$  to  $B$  the aeroplane has really travelled through a distance,  $A C$  (Fig. 1), while the wind has carried it through a distance,  $C B$ . Of course, on a fairly calm day the error involved in ignoring the difference between  $A B$ , and  $A C$ , might be negligible. Let us suppose, however, that the



trial flight is made up and down the wind, so that there is no leeway to allow for. Then if allowance is to be made for the time taken by the aeroplane to reverse before flying back from  $B$  to  $A$ , it will be necessary to measure the times for the outward and return journey separately. If these be  $t_1$  and  $t_2$ , then

$$t_1 = \frac{AB}{V + u}, \quad t_2 = \frac{AB}{V - u} \quad \text{and so } V = \frac{1}{2} AB \left( \frac{1}{t_1} + \frac{1}{t_2} \right).$$

The quantity  $V$ , is thus determined independent of the value  $u$ , of the wind velocity, the only assumption being that the wind velocity is the same at the same place during the two journeys, even though it may vary from point to point along the course  $A B$ . I have already noticed that the two time readings would have to be taken in any case, to correct for the time occupied in turning, so that this method involves no additional readings.

Next, as to the determination of the ship's speed. The method suggested involves an accurate knowledge, not only of the length of the ship, but of the position of various objects on deck. How is such information to be obtained? If the length of the ship were known, the speed could be determined by flying through such a distance that the telescope—first aligned on the stern—points to the bows of the ship. Dividing the ship's length by the time for this flight, the speed of the aeroplane relative to the ship is obtained, the difference between this and the aeroplane's speed being, of course, the ship's speed. The difficulty, however, is that the aeroplane's speed is not known. The aeroplane's speed in still air is

\* \*

## High Flying in Austria.

Up to the present no great amount of attention has been paid to altitude flying in Austria, but on the 21st inst. Lieut. Bier improved

known, and the velocity of the wind on shore or on the deck of the vessel from which the aeroplane started may have been observed, but this gives little clue to the speed of the particular gust of wind in which the aeroplane happens to be travelling.

I do not know how Capt. Piumatti proposes to allow for the variations of wind in the various strata, though he draws attention to their existence. The anemometer is of no assistance whatever, since, if carried on the aeroplane, it records the velocity of the wind relative to the aeroplane, and this is merely the quantity  $V$ , which could be determined at any time, and which, it was suggested, had already been determined by a separate experiment.

With regard to the time taken for the bomb to drop, the equation,  $S = \frac{1}{2} g t^2$ , is true if we neglect air resistance. This may certainly be done for heights of less than, say, 100 metres, but at 200 metres the effect of air resistance is considerable, and may amount to as much as 15 per cent. for some types of projectile.

Bashford's experiments with his chronograph give some useful data for calculating the effect of air resistance, but the mathematics of the subject are too intricate for treatment here. The effect can, however, be calculated with sufficient accuracy, if the projectile has some familiar shape (spherical, or cylindrical, with hemispherical, flat, or ogival head), are the shapes for which Bashford's experiments give data, and if the weight and dimensions are known. For quite irregular shapes the correction could doubtless be estimated with sufficient accuracy.

Capt. Piumatti suggests that "a correction for bomb energy due to aeroplane speed must be made." This is surely something more than a correction. It is, in fact, the most important factor in the whole problem, as an example will show. If a projectile is to be dropped from an aeroplane travelling at 60 miles per hour to hit a stationary target 165 ft. (about 50 metres) below, then the bomb-dropping point is no less than 280 ft. or 85 metres from the target, the distance being measured horizontally. This calculation neglects air resistance to the motion of the projectile. As I have already indicated the difficulty of obtaining the true speed of the aeroplane, it will be seen that we are still some distance from the solution of the problem.

Lastly, even supposing that the various quantities could be obtained in the way suggested, the calculations involved are rather too great to be performed by a passenger in an aeroplane, even though his quiver is full of specially constructed slide rules. If the attack is to be successful, it is essential that the observations, sighting and discharging, should all take place in a few moments, since all the conditions, including the "patient expectancy" of the enemy, are liable to change every minute.

Realising this fact, I have worked in the direction of producing sighting instruments by means of which the bomb-dropping point may be obtained without calculation, and have so far succeeded in reducing the necessary outfit to two telescopes fitted with suitable adjustments, a barograph, and a watch. The manipulator takes his observations, sets his "sighting" telescope by means of graduated scales which perform the calculations themselves, and discharges his bomb when the target appears on the cross wires. Moreover, I have not confined myself to the case in which the aeroplane flies in the wake of the ship, as this is a dangerous proceeding, while it unduly limits the attacking capacity of the aeroplane.

Others, no doubt, are working along similar lines and will achieve even better results. There is plenty of room for improvement, and as experiments progress the instruments will become simpler and more reliable. The degree of accuracy which it will be possible to achieve in actual warfare is very difficult to estimate, but if as Mr. Walter F. Reid suggests (as reported in FLIGHT, March 4th), 300 lbs. of explosive can be dropped, it should be possible for an aeroplane to do considerable damage, even with a large error in aiming.

on Miller's old record of 600 metres by rising to a height of 1,110 metres on his Etich monoplane. The record was made at the Etich testing ground near Vienna.

# A THEORETICALLY STABLE PLANE.

By C. L'ESTRANGE.

In the issue of *FLIGHT* of December 17th, 1910, I described how, with the aid of a few simple experiments, I had arrived at a shape for a plane which, to all practical purposes, showed itself to possess a marked degree of automatic stability.

Having gone into the theory of this type of plane, I will now endeavour to prove that it is theoretically stable. In order to get a clear idea of the correct shape of this type of plane it is only necessary to imagine a pyramid A, B, C, D, E (Fig. 1); then the part shown in section represents the planes of the machine.

It will be seen that the resultant lift of the two planes meet at some point F, and the direction of motion or thrust of the propeller will be along the direction of the arrow M.

Considering first the case of lateral stability, if we pivot the pyramid along A, D, and swing the remainder round from side to side, we see that this action corresponds to a lateral cant of the machine in flight. It will be readily seen that the lower plane is canted to a steeper angle with the line of flight, hence tending to raise it; whilst the opposite plane, which has been canted up, assumes a horizontal or downward position, thus depressing it relatively to the plane which had been canted down. The whole effect, therefore, will tend to keep the machine upright. If due to small external forces we have not got an absolutely stable machine, at all events, we have one possessing a considerable amount of it, and so relieving some of the strain on the part of the aviator.

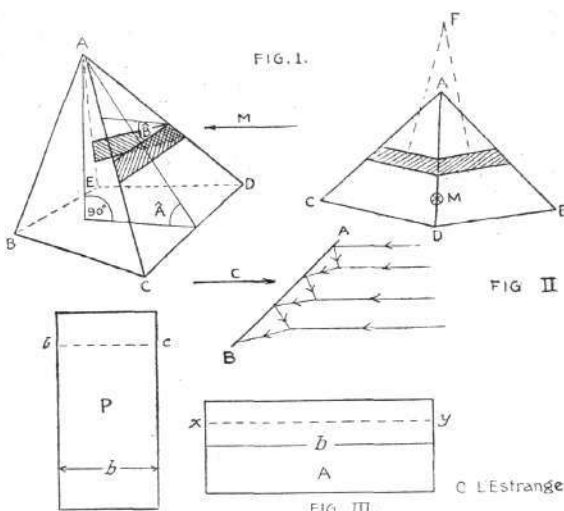
Next, turning to longitudinal stability, we see that this can be overcome to a certain extent by balance, for whereas lateral balance is upset by a difference of pressure on the two wings, such effect is not likely to occur longitudinally. A mechanical balance will, therefore, be more likely to contribute towards longitudinal stability. The only alteration in pressure longitudinally will take place when the angle or speed of the plane is altered to the normal. Perhaps a brief proof of this will revive our memories and make this point more clear.

In Fig. 2 A, B, is a plane moving in the direction shown by the arrows C. The other arrows and lines show the direction of the wind or air pressure when it meets the plane. After striking the plane it will be seen that it is deflected back from the plane and meets another stratum of air coming towards the plane; the resultant of these two pressures will then meet the plane at a glancing angle, this glancing effect being greater at the leading edge where the air first strikes it and tapers off towards the trailing or rear edge. The centre of pressure will then be nearer the leading edge, and the centre of pressure gradually moves towards the leading edge as the plane arrives more nearly at a position in the plane of motion, at which point the centre of pressure is actually on the leading edge.

If we take two planes, A and P (Fig. 3), then the line of resultant pressure will be along the dotted lines b, c, and

x, y, approximately. But the plane P will be grossly inefficient, due to waste or ineffective area in rear. However, in both cases a displacement of  $f$  feet of the centre of pressure line causes a shift of area of  $f \times b$  square feet, where  $b$  is breadth of plane, that is,  $f \times b \times p$  lbs. where  $p$  is the pressure per square foot. So that we see that the smaller we can take  $b$  the breadth, the more longitudinal stability we shall have. But we have already seen that a narrow plane is very inefficient, so that if we take a mean or diagonally disposed plane we shall get the benefit of this effect.

One of the first queries which will cross the mind of the



critic will be that all principles of the usual dihedral angle have been opposed, that is, as the cant of the lower wing increases, so its supporting area decreases, two points acting in unison to upset the balance.

If, however, we look closely into it we see that—(1) The supporting area varies inversely as the sine of the angle of cant; (2) The raising effect due to the increased cant varies as the sine of the angle of cant.

These two facts will then tend to balance one another, and in order to keep the raising effect greatest it is only necessary to design our machines so that the angle A is greater than the angle B (Fig. 1).

## The Influence of Aviation on Tactics.

THE progress made in the science of aviation has been so rapid during the last twelve months that it seems hardly open to doubt that if war were to break out to-morrow, we should find a certain number of aeroplanes and airships ready to take the field in both the opposing armies, and it is time to consider whether their presence will cause any modification in our existing tactics.

The stream of information acquired after weeks of labour by the activity of spies, the good-will of a friendly population, or the efforts of a victorious cavalry, is nothing more than a headline to the volume of news which the flying man can gather in a single successful flight.

Strategically or tactically a General covers his movements with a screen—a natural screen, a cavalry screen, a fighting screen, or an outpost screen—according to circumstances; but now this will be useless, or at any rate inadequate. The march of every unit and its strength will be obvious to the eye above, and it seems that the only way to obtain any measure of secrecy will be to effect the transfer of troops

from one point to another in the dark. The difficulty of concealment of an outpost line from earthly foes, combined with adequate observation of them, is well known, and the added difficulty of providing against scrutiny from above can be easily realised.

It is possible that I may be underestimating the difficulties of accurate observation, and it will be a useful thing if we can ascertain to what extent the numbers and position of troops—especially the numbers—can be gauged from an aeroplane, and the airman must tell us by experimenting in this direction. Can he, for instance, from a safe altitude discriminate between a khaki coat lying on the ground and the same garment on a soldier's back, between a helmet on a stick and a helmet on a head, or between half-a-dozen tree trunks and a battery? If not, we may find ourselves planning deceptions for the sake of deception alone, but more often we shall be compelled to do so to avoid observation, and experiments ought to be made as to the form which deceptions should take.

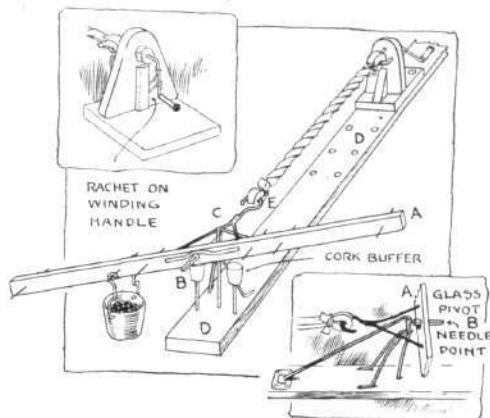
MAJOR R. N. KNATCHBULL, D.S.O.,  
In the *United Service Magazine*.

## TESTING ELASTIC MOTORS.

By W. LANGDON-DAVIES.

MANY readers of FLIGHT having asked for further particulars of the testing apparatus on which I obtained the data published in FLIGHT, No. 38, Vol. II, pages 750-1, I give the following brief description:—

A light wooden arm, A, some 14 ins. long, having a conical glass cap, B, passing through its centre, was mounted hori-

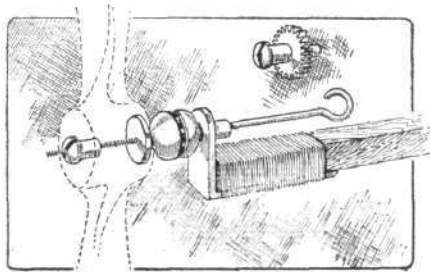


zontally upon a short thick needle, C, soldered through a strong upright support fixed to a board, D, 3 ft. or more long.

The support shown in the drawing is exactly as it was at the end of the tests, its complicated structure is due to the fact that when I commenced the tests I had no idea of the

### A BALL THRUST FOR MODELS.

ILLUSTRATED in the accompanying sketch is a well made and useful little fitting for model aeroplane makers manufactured by T. W. K. Clarke and Co. As can be seen, it consists of a combined ball thrust bearing and propeller spindle; it is all turned work and has six Hoffmann balls. The bearing



bracket can be attached in various ways to any form of framework, and not necessarily as shown in the sketch, which is lashed to a spar.

These ball thrusts are a useful size and suit almost any propeller. The same firm also supply gear wheels, one of which is shown in the sketch.

### Miss Lilian E. Bland Takes Up the Ford Car.

MISS LILIAN E. BLAND, of Carrmonee, Belfast, who is so well known in connection with her very practical and remarkable work in building her own glider and aeroplane in Ireland and flying with them, has been, we learn, appointed agent in the Belfast district for Ford cars. Miss Bland, speaking from personal experience, has found the Ford the easiest of cars to learn to drive, and she is ready in practice to demonstrate its number of good points to any prospective buyer in or round Belfast. We wish her every success in her latest enterprise.

magnitude of the forces I should have to measure, or how far I should go with the tests, consequently the apparatus had to be strengthened from time to time, hence its rather patchy construction; there is no need to imitate this.

Through the arm, A, were driven pins at 2, 3 and 6 ins. radius from the centre, the second set of pins to balance the first; the arm was carefully balanced by nipping bits off the pins, and a couple of cork buffers, as shown, provided to allow a small rock but prevent the arm from revolving too far.

Through the arm was fixed a brass stirrup, to clear the support, terminating in a hook, E, to which one end of the elastic to be tested was fastened, the hook was smooth but not protected in any way.

The other end of the elastic was fastened to another hook provided with a winding handle and ratchet, as shown in the top left-hand sketch; this piece could be screwed down at different distances along the board, D, for testing different lengths of elastic.

The elastic was twisted a number of twists by the handle, then shot (about 450 to the ounce) were poured into the bucket (a thimble), hung on a pin as shown, until a balance was obtained, the bucket and shot were then taken off and weighed, then more twists and more shot; when the bucket was full it was emptied and moved out a pin.

The torque at 2 ins. radius with the bucket on the first pin = weight = W, on the second pin  $W^3$  on the third pin  $W^3$ .

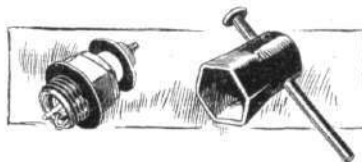
A cover, not shown, was put over the elastic to prevent damage when it broke.

The same elastic was never used twice, and was tested straight up until it broke, taking 3 or 4 minutes per reading.

I should not advise graduating the arm and sliding a single weight along it, as this will be found difficult to do for the lower readings unless the apparatus is very carefully made.

### THE "GNAT" IGNITION PLUG.

EVERY little counts, says an adage, which nowadays has a particular reference to aeroplanes, but although there is perhaps not much to be saved in the way of weight in eight ignition-plugs, the Sphinx Mfg. Co. have at least done as much as seems possible in this direction in their Gnat plug. This is a plug, illustrated in the accompanying sketch, together with a box spanner that is supplied therewith, which is the smallest and lightest plug on the market. It is so extremely small that there is scarcely anything of it, for the



overall height of the plug above the cylinder is less than an inch. There is about a quarter of an inch of steel body, and about a quarter of an inch of insulator projects above the brass packing-gland. The remainder is merely the screw terminal for the attachment of the ignition wire.

In general principle the Gnat ignition-plug is constructed like any ordinary ignition-plug, with an insulated central electrode held in a steel barrel suitably threaded to fit the standard ignition-plug holes.

### Normale Propellers and their work in Great Britain.

A POINT worth noting is that in his London to Paris trip M. Pierre Prier's Blériot machine was fitted with a Normale tractor, while Mr. Claude Grahame-White used a propeller of similar make during his trip to Birmingham. The sole agents for these propellers for Great Britain and the Colonies are Messrs. Mulliner, Ltd., and inquiries regarding them should be addressed to the Aeroplane Works, Vardens Road, Clapham Junction, S.W., where a large stock of these propellers is kept, and Mr. Kny gives his personal attention to the requirements of clients.

## CORRESPONDENCE.

\* \* The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

Correspondents communicating with regard to letters which they have read in FLIGHT, would much facilitate ready reference by quoting the number of each such letter.

NOTE.—Owing to the great mass of valuable and interesting correspondence which we receive, immediate publication is impossible, but each letter will appear practically in sequence and at the earliest possible moment.

### Limits to Construction of Aeroplanes.

[1149] The following table of limits will probably interest some of your readers. The figures are, of course, only approximate:—

Quantity.	Lower Limit.	Determining Causes.	Upper Limit.	Determining Causes.
Velocity	... 20 miles per hour	Stability and weight of construction	200 miles per hour	Strength, weight, and drop of propeller thrust
Loading	... $\frac{1}{2}$ lb. per sq. ft.	Construction	... 10 lbs. per sq. ft.	Velocity
Total weight	... 200 lbs., or say 300 with motor	Weight of man	... About 10 tons	Size, increase of weight with dimensions
Useful weight	... 150 lbs.	Weight of man	... About 2 tons	Weight of engine and construction
Propeller thrust	... 1 lb.	Axial velocity and friction	... About 40 lbs.	Friction
per h.p.	...	Weight of motor and construction	... About 100 lbs.	Minimum velocity required
Lift per h.p.	... About 10 lbs.	Best angle of attack	[About 25°]	Safety
Gliding angle	... 6°	Minimum load	... About 2,000 sq. ft.	Construction and load
Area	... 100 sq. ft.	—	... About 1,500 miles	Fuel (weight of)
Travel	... 0	—	... About 25	Calorific values of fuel
h.p. hours per lb. of fuel	... 0	—	...	...

T'ang Shan, Chili-Li, North China.

HERBERT CHATLEY.

### The Newtonian Method.

[1150] As a constant reader of FLIGHT, may I ask you to explain the following: In "Artificial and Natural Flight" (Maxim), p. ix of preface and pp. 2, 6 and 62, &c., of the book, the writer derides "Newton's law." What particular law is referred to, and is it the same law as that mentioned in "Flight Manual" N. 8, &c.?

Also at pp. 55 and 56 of Sir Hiram's experiments show that as the angle increases the lift increases. "Flight Manual," No. 20, appears to controvert this. Have I misread either?

A READER.

[The laws referred to are the same, but whereas Maxim is discussing the Newtonian method applied to inclined planes, "Flight Manual," N. 8, is dealing with the same theory applied to normal planes. The Newtonian method, as "Flight Manual" explains, is applicable in aerodynamics wherever it is possible to define the change of momentum taking place in the virtual air stream. A normal plane is an obstruction that brings a certain amount of air to rest, but the amount is not exactly defined by the area, because a quantity of the air leaks over the edges. Whereas the Newtonian theory gives full value to the area of the obstruction, the average working value for approximations ("Flight Manual," T. 154) is only '6.

In dealing with inclined planes the Newtonian method fails because it is impossible, at any rate in the light of present knowledge, to say what change in momentum an inclined flat plane produces in the virtual air stream. The Newtonian theory assumed, on purely mathematical logic, that the effect of the angle would be proportional to the square of its sine, hence the formula in "Flight Manual" T. 156. This value, however, practical experiment has shown to be very inaccurate, not because the logic by which it is deduced is at fault, but because the hypothesis stating the conditions does not correctly represent things as they actually are. The nearest approximation to a law defining the effect of an inclined flat plane is given by Duchemin's empirical formula, which can be compared with the Newtonian law in "Flight Manual" T. 156.

It will be observed that both laws give an increasing lift with an increasing angle.

An attempt to apply the Newtonian method to cambered planes has recently been made editorially in this journal, and may be studied in that series of articles entitled "Can we

Fly Faster for Less Power?" Also, in a summarised form, in the recent article on the mathematics of the cambered plane, which appeared in FLIGHT, January 21st, page 58. In order to make this application it was necessary to establish an hypothesis that might plausibly represent the actual conditions, and it is assumed, in the rather dim light of present-day knowledge, that the camber of a plane represents the angular deflection of the virtual air stream. Hence the evolution of the term "angle of deflection." Having defined the angle, the span, the sweep and the velocity, we have established, by hypothesis, the change of momentum in a stated mass of air, and the application of Newton's law gives the resultant lift on first principles.

Our theory of the cambered plane does not pretend to be exact, but it does aim at being logical, and it is an attempt to put the mathematics of the cambered plane on a simple straightforward basis that can be understood by everyone and may be readily brought into line with practice as soon as experiments provide the necessary data. In other words, it seeks to establish the cambered plane on the same basis as the normal plane, so that, like the normal plane, it may have its recognised constant, which experimenters will verify from time to time. The constant for the normal plane, for example, has been verified by Hutton, Langley, Dines, Froude and Stanton, with slightly varying results, but the variation is not a source of confusion, because all experimenters have worked with one definite object of establishing the coefficient for this same formula. Consequently, each succeeding experimenter has been able to improve upon the methods of his predecessor and to arrive at greater accuracy in his results.

Now in the case of the cambered plane, there is hopeless confusion of thought regarding its fundamental principles, consequently no two experimenters try to find out the same thing. Some regard it merely as a curiously efficient form of flat plane, for it is not even yet generally recognised that the cambered plane is cambered for fundamental reasons.—Ed.]

### Kite Competition.

[1151] In reply to S. Horrock's letter (1064), in which he asks (1) What length of cord; and (2) What was the angle of winning kites.

(1) The length of cord or wire was 300 yards.

(2) The angles of the winning kites were as follows:—(1) C. W. Hayes, 56°, with a kite 75 sq. ft. area; (2) A. J. Brooke, 53°, with a kite 60 sq. ft. area; (3) C. K. Scarf, 41°, with a kite 30 sq. ft. area; (4) W. Jones, 50°, with a kite 36 sq. ft. area; (5) H. W. Browne, 55°, with a kite 30 sq. ft. area. But the marks were not only for angle but stability, strength of construction and collapsibility as well. The result will be found on page 822, No. 41, Vol. II, October 8th, 1910.

The results of the Major Baden-Powell Challenge Shield Competition may be interesting to this gentleman, and he will find the official account on page 506 (No. 27, Vol. II), July 2nd.

Should he require any other information I shall only be too pleased to reply.

W. H. AKEHURST, Hon. Sec. K. and M.A.A.

### Gyroscopic Control.

[1152] In the issue of FLIGHT for March 4th a letter appeared from your correspondent Mr. D. Grieg on the subject of "Gyroscopic Control." I read his letter with great interest, but I think that his meaning is somewhat obscure. At the commencement of his letter he states,



in reference to the method of mounting the gyroscope on the aeroplane, that the latter would be able to swing either laterally or longitudinally without in any way affecting the former, and then later on he remarks that it (the gyroscope) comes into operation on the plane tilting. To me this seems somewhat contradictory, but it may be that I have not quite grasped his meaning.

He also writes that on the plane tilting the point marked A in his diagram makes contact with either B or C. Quite true, but surely he will have the same contact made when the nose or tail of the machine dips, owing to the gyroscope's precessional movement, a fact which may possibly spoil the desired effect.

No doubt this could be easily remedied by employing a somewhat different method of attachment.

Gloucester Street.

A. PERCY BRADLEY.

#### Dipping Front Edge.

[1153] By your note to my letter (1126) I feel I cannot have made myself clear concerning the dipping front edge. You say that the energy taken from the up current must give a dynamic lift. With this I entirely agree, but it seems to me that, seeing that this lift comes from destroying the momentum in the up current, just as much negative lift (or downward force) must be produced in giving the air this upward momentum. This follows from the principles of dynamics, for no other forces act on the air except those between it and the aeroplane. Thus the net lift is given only by the final downward momentum of the air represented by the trailing angle.

Wimbledon.

B. BRUCE-WALKER.

[The energy in the up current certainly has to be paid for as we have already explained, but it does not necessarily have to be paid for by a corresponding negative pressure on the plane itself. Our own view is that the thrust of the propeller is the particular coin in which the debt is discharged.—Ed.]

#### Propeller Action.

[1154] Does the pilot of a Blériot monoplane feel a draught from the tractor in front of him while he is in flight?

Also does a propeller screw itself through the air, pushing the aeroplane before it, or does it derive its motion forwards by the reaction of the volume of air it sends back? I am totally ignorant of these matters, and have had no satisfactory explanation as yet.

Knightsbridge.

P. K. H.

[The draught from a tractor screw naturally augments the ordinary draught due to the flight velocity.

A propeller exerts a thrust by virtue of the volume of air that it discharges to the rear. As the result of the thrust it proceeds bodily through the air, hence it is equally correct to say that a propeller does screw itself through the air. But it must never be overlooked in dynamics that fluids are incapable of offering an abutment except while being accelerated, hence the reason for the slip stream or draught from a propeller, which represents the accelerated volume of air that has by virtue of its acceleration served as an abutment for the wedge-like action of the propeller blades. In the mechanics of solids this idea of slip finds no place in the ordinary screw and nut motion.—Ed.]

#### Pendulum Stability.

[1155] In reference to Mr. Johnson's letter (1120) on pendulum stability, as regards lateral stability the pendulum connected with the balancing tips would be all right when flying in a straight line, but for turning it would interfere with the control.

For instance, supposing the airman wanted to turn to the right, he would want to "bank" the machine left side up and right side down.

The right side being low the pendulum would automatically pull the right balancing tip, thus bringing the machine on an even keel and nullifying the "banking" operation.

As regards longitudinal stability, a pendulum connected with the elevator would be all right if it did not interfere with the airman's control in that direction.

I think it is better as it is, for both lateral and longitudinal control to be under the direction of the airman, as it is all done with one lever, and I should think comes to him as naturally as riding a bicycle.

W. H. NORTON.

Redhill.

#### Classification of Aeroplanes.

[1156] I think Mr. Twining's idea excellent, but why not make the second figure (which represents the main planes) in large type, to show which are the large planes. The figure "o" would then be unnecessary to indicate the absence of an elevator.

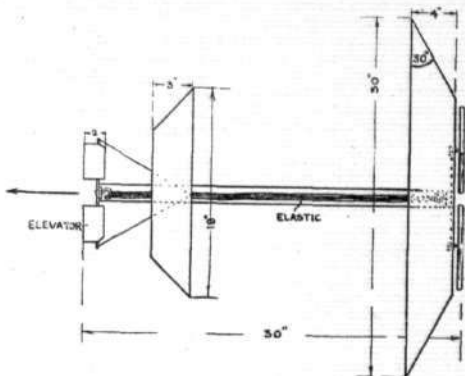
Scarborough.

PERCY SWAINE.

## MODELS.

### Model Monoplane.

[1157] I was rather startled to see some drawings of a model monoplane accompanying letter 999 from "J. C. B." for at first sight they appeared to be the same as my own, only on mine it will be noticed the ends of planes are cut off in an opposite sense; the elevator is also distinctly different, mine being divided into two



pieces with a wire rod between them. My monoplane is made of  $\frac{1}{8}$  in. square American poplar and is propelled by two "Aerospeed" 8 in. propellers, the planes have a slight camber and are covered with fine silk. The wood, propellers and silk were purchased from A. Melcombe, Bedford. I cut the ends of my planes off as a help to the stability of the model.

My longest flight has been 341 ft. while the machine has remained in the air for 43 secs.

Cainscross.

HARRY S. D. GABB.

### Models at Olympia and our Prize Scheme.

[1158] Being an exhibitor in the Model Section at the recent Aero Show I was naturally interested in your article "Models at Olympia" which appeared in your issue of April 15th.

Although I am bound to admit the article in question was very ably written, I cannot find myself in agreement with all the statements it contains. The fact that no prize was given for originality of design was, as you say, unsatisfactory. It seems to me the reason of this was not that insufficient encouragement was given to inventors in advance announcements, but rather that the judges were not looking out for originality.

Surely the reason for holding exhibitions of all kinds is to encourage original ideas and advance the particular industry with which they are connected. Yet I find at this last and previous shows, the prizes have all been awarded to copies of existing "flyers" (if we exclude the model exhibited by Mr. Bragg Smith in last year's exhibition, which, I believe, was an original design) or to "toys." It was the absence of a definite and clear purpose in the nature of the judging, and not in the models, that was "the most unfortunate feature."

I sincerely hope the prize scheme you anticipate carrying out will be successful in bringing to the front something "progressive," but to my mind it has its weak points.

It may be that writing essays is "conducive to the acquisition of an intelligent appreciation of the why and wherefore of things," and there is no doubt that flight is based upon the great science of aerodynamics. There are scores of people, however, who could write miles of copy on aero-dynamics and similar sciences and yet not have the slightest notion of the practical or mechanical side of building an aeroplane.

It is more likely that the study of this particular science, and writing essays thereon, will do a good deal towards developing a scientific vocabulary (as is shown by some of the letters which appear from time to time in your journal), but the use of a few scientific terms and pseudo-scholastic phrases does not prove that one understands the scientific principles.

It is doubtful if the Wright Brothers knew very much of aerodynamics when they produced their first "flyer," and a study of the

march of progress in mechanical science will reveal numerous cases where the mechanical invention has preceded the scientific law. The steam engine came before the dynamical theory of heat. Again, our knowledge of electricity was very crude when the telegraph was invented; in fact, the theory of electricity is not ready yet.

These examples could be multiplied a hundredfold. After the invention has been made science comes along to interpret it. The same experience will no doubt apply to the conquest of the air. The workers will solve the problem and the savants will work out the whys and wherefores after.

It is obvious that each invention avails itself of the previously accumulated knowledge; but in most cases it makes a start in advance of what is known, and opens up a new series of facts for investigation. The points you particularly emphasise, for instance, *re* guy wires or suitable mounting of wing spars, &c., are connected with the mechanical or practical, and not with the academic side of the question at all.

I agree with all you say about the prizes for workmanship, and cannot see how the judges could have done better than they have this year, but I cannot say I feel so sure about the awards in the same class in 1910.

Although I commenced by saying I was an exhibitor, I have purposely refrained from mentioning my own model, and I have no desire to convey the idea that I have a personal grievance to air. I have in mind at the time of writing several contrivances exhibited at Olympia in 1910 which the judges on that occasion apparently failed to consider worthy of recognition, but which some of the more enterprising manufacturers have since taken full advantage of, and have incorporated in their 1911 machines.

Perhaps I may also be permitted to say it is inaccurate to state that "all competitors were invited to explain their models to the judges." In some cases, at least, no intimation whatever was given even as to the day on which the judging would take place. It is, therefore, unfair to suggest that it "displayed lack of interest in their work" because some of the inventors did not show up at the particular time the judging was in progress.

In conclusion, I may point out, some exhibitors are unfortunately not in a position to leave their business when they like, and others fortunately have enough sense of self-respect to prevent their waiting eight days in order to be at the beck and call of the judges.

Ilford.

FRED COLLINS.

## "Flight" Prize Scheme.

[1159] I have read with much interest the particulars of your new prize scheme for model aeroplanes, and your remarks on the development of present day models. On the whole, I must say the intent is excellent, but your view of the model movement is, in my opinion, disappointing, coming as it does from the leading flying journal of England. I consider the model as one of those silent workers that has done so much for aviation. It has been a model that has made many a convert, and very rarely one of the kind designed to demonstrate a certain principle. Personally, I first took an interest in flight after reading a description of Prof. Langley's model experiences in America, and although his successful model was intended (apparently) to demonstrate that mechanical flight was possible I was not content to know that it *did* fly, but I longed to know why and how.

In view of the wonderful progress made in the art of model making and flying during the last two years I hardly think that your disparaging remarks concerning the "youthful amateur category" are justified. Many records have been made by this branch of model aeroplanists, and surely they must know why their machines fly as fast, long, or high as they do. Aeroplanes generally appeal strongest to those of a mechanical turn of mind, and it is only natural for them to yearn to know the why and the wherefore. The few members of the coming generation whom I have met and who are interested in model flying machines, have decidedly not been content with the simple knowledge and achievement of the success of their machines, but have troubled themselves considerably over the underlying reasons. There is also the sport of the thing, but that is another aspect with which we are not concerned here.

And, I would ask you, what are the many pilot-aviators of to-day doing for the actual development of the flying machine? True, they are bringing home the fact of its national and social importance, and I respect them for it, but I, with, I am sure, a host of other model enthusiasts, contend that model flyers are obtaining a greater insight into, and consequently advancing the knowledge of, the theory of aeronautics than many of the "full size" flyers of the present day.

Camberwell Road.

NORMAN V. L. WAGHORN.

## IMPORTS AND EXPORTS, 1910-11.

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910).

	Imports.		Exports.		Re-Exportation.	
	1910.	1911.	1910.	1911.	1910.	1911.
	£	£	£	£	£	£
January ...	2,516	1,196	750	1,688	550	Nil
February ...	437	3,129	2,950	1,786	—	—
March ...	7,516	11,327	128	1,027	600	357
	10,469	15,652	3,828	3,901	1,150	357

## PUBLICATION RECEIVED.

### Catalogue.

North British Aeroplane and Balloon Fabrics. The North British Rubber Co., Ltd., Castle Mills, Edinburgh.

## NEW COMPANY REGISTERED.

Manchester Aerodrome, Ltd.—Capital £1,000, in £1 shares.

## Aeronautical Patents Published.

Applied for in 1910.

Published April 27th, 1911.

26,027. E. HAVEN. Aeroplanes.  
28,125. C. HANSCHKE. Flying machine, with wings revolving in housings.

Applied for in 1911.

Published April 27th, 1911.

500. J. VON KORWIN. Aeroplanes.

## DIARY OF COMING EVENTS.

### British General Events.

July 1 .. Gordon-Bennett Aviation Cup Contest.  
July 27-Aug. 5 .. Daily Mail Round England Contest.  
Oct. 31 .. Close of British Michelin Cup.

### Foreign Fixtures.

May .. Paris—Bordeaux—Paris.  
June 18 .. European Circuit—Paris, Brussels, London, Paris.  
July .. Italian Circuit.  
July 1-13 .. Circuit Berlin—Hanover—Hamburg.

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